

November 1953

finish

THE MAGAZINE OF
Appliance AND
Metal Products MANUFACTURING

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CERAMIC COLOR & CHEMICAL MFG. CO.
New Brighton, Pa., U.S.A.



finish SUGGESTION BOX

Sheet fabricator features quick change for punching, notching and nibbling

RAPID interchangeability for punching, notching and nibbling is an outstanding feature of a new sheet metal fabricator.

The unit operates with a minimum of vibration and noise at 165 strokes per minute for single-hole punching and for nibbling. The head is said to be revolutionary in its simplicity of design and operation.

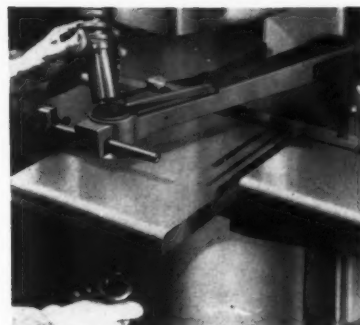
Operators work directly from blue prints or operation sheets, without requiring templates.

One holder, which incorporates a "quick change" system permits 10-second changing of punches and dies for punching various round and shaped holes up to 1 1/4" in diameter.

Another holder provides for punching various round and shaped holes up to 3 1/2" in diameter, and only requires the interchanging of three parts — punch tip, stripping plate and die.

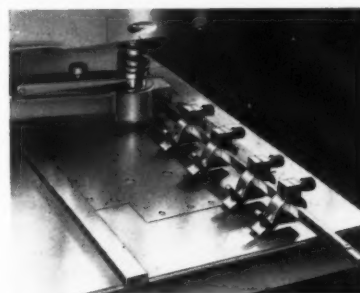
Adjustable back and side gauges on both 1 1/4" and 3 1/2" holders provide accurate hole locations. Simplicity of this design permits changeovers to be made in a matter of seconds.

By simply placing an independent, self-contained notching unit on the fabricator bed table, notching operations are immediately performed without any ram adjustments. The notching units are equipped with



Above: Illustrating the interchanging of punches and dies. The die is simply pushed down through holder base, and punch assembly lifted from top of holder.

Below: Showing four adjustable fingers tops for quick gauging of work.

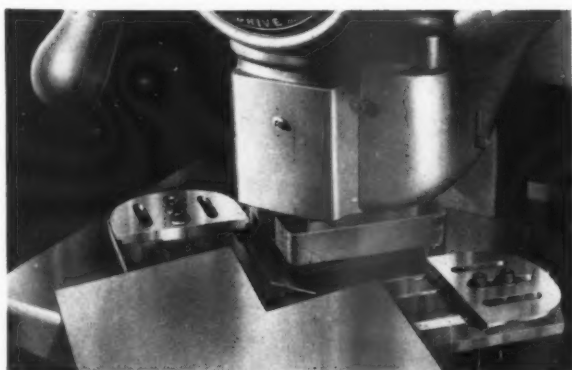


built-in scales and gages adjustable up to 5 inches for corner notches.

All types of nibbling are said to be possible with the fabricator. A nibble lever controls the non-repeat device for continuous, uninterrupted operation while nibbling.

Source for further information on this fabricator may be obtained by writing to finish.

Showing a notching unit equipped with two built-in scales and gages adjustable up to 5" on fabricator bed table. Note the notched work in foreground.



Showing circle nibbling device equipped for pivoting from center hole in the work. Equipment also includes auxiliary cabinet and tool rack.



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D-Enameling*

IS NOW A PERMANENT PART OF THE
APPLIANCE MANUFACTURING PICTURE

Once D-Enameling was a temporary expedient which appliance manufacturers used to stretch critical steel supplies, but that day is gone! Now, America's leading appliance manufacturers consider D-Enameling a permanent part of their manufacturing picture. D-Enameling has come of age... has assumed its role as a routine step in appliance manufacturing. The reason is simple, D-Enameling transforms scrap loss into profit dollars.

*D-Enameling is a patented process



New Process D-Enameling Corp.
Highland and New Haven Avenues • Aurora, Illinois

8

NOVEMBER • 1953 finish

THE finish spotlight

ADS OUT _____



General Electric has just introduced this new quick-load, undercounter dishwasher that can be loaded without removal or sliding of the rack. The new dishwasher can be installed under new or existing countertops. Where permanent installation is impractical, the unit can be converted into a roll-around model. Conversion kit includes a caster base assembly, cord set, and inlet and drain hose.

refrigerator manufacturer reports.

"12-ft. panels drawn in one piece,

fired without sagging

using Ti-Namel®"

Large panels for commercial refrigerators are a big problem . . . hard to draw . . . sagging or warping after firing. Here's how a major manufacturer licked these problems by switching to Ti-Namel, Inland's special one-coat enameling steel.

Big 10-ft. or 12-ft. front panels are drawn in one piece. Then, applying one porcelain enamel coat direct-on-Ti-Namel produces a hard, thin finish, eliminating ground coat. Ti-Namel's high degree of sag

resistance means panels can be hung vertically while firing (instead of being fired horizontally on pins), which *triples* furnace capacity per heat load. And there's no sagging or warping during firing.

Results: a *better quality* enameled product, free of pin marks, no buckling . . . *increased production* . . . and *lower costs* through increased plant capacity and elimination of time-consuming production steps.

greater sag resistance with



Inland's Ti-Namel is a titanium killed steel developed expressly for porcelain enameling. Adding titanium to carbon steel stabilizes the carbon which eliminates re-boiling and makes possible all these advantages over ordinary enameling sheets:

- Permits a hard thin finish with one white coat direct-on-steel, eliminating ground coat and reducing chippage.
- Resists sagging, twisting and warping even when severely fabricated and fired at high temperatures . . . costly, unsightly excess bracing eliminated.
- Enables use of lighter gauge steel, allowing more flexibility in design and fabrication.
- Larger units can be deep drawn in one piece . . . excellent drawing properties . . . no stretcher strains . . . handling costs reduced, output increased.
- Less enamel milling and spraying, better coverage, fewer and faster firings, less waste.
- Takes a glistening, clean, long-lasting finish, free from crazing, pitting, black specking, fishscaling or discoloration.



Our new illustrated Ti-Namel catalog gives you all the facts and tells about the services available through our Ceramics Laboratory. We will be happy to send you a copy. Why not ask an Inland specialist to tell you how Ti-Namel can provide production and sales benefits for your products.

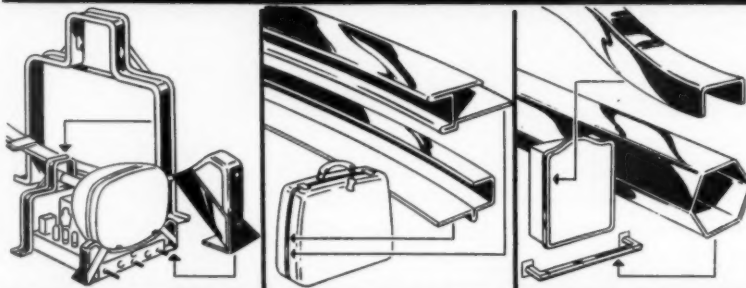
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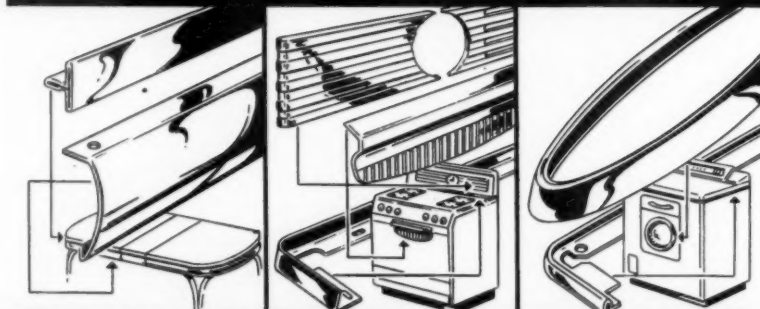
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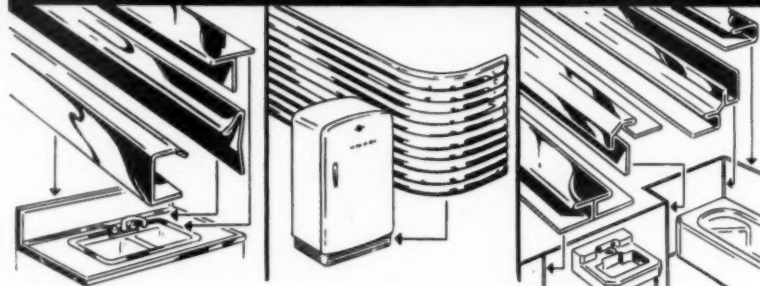
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W. H. Lesser
Quality Control Supervisor
Specialty Control Dept.
General Electric Company
Schenectady, New York

your request is granted, Mr. Lesser.

invitation from "down under"

Gentlemen:

It is now about three weeks since Horrie returned, and showed me a print of the photograph (*August finish*, Page 75) in which, moreover, I was able to see more of the fish—a magnificent trophy. You should come out here where, I believe, the big game fishing is even better than it is in Florida—or so Zane Grey used to say.

I really do wish you and other Americans would come out here more often than you do. All of us have always been so well received in America that on the one hand we feel we must be wearing our welcome a bit thin, and on the other we would like the chance of making some slight return for all the kindness we have had. Thanks to this, Horrie's and Arthur's visit was most enjoyable for them and useful to our firm.

A. M. Simpson
Director
A. Simpson & Son Limited
Adelaide, South Australia

the welcome mat will always be out for the type of men you send to the U.S.A. We hope to try that big game fishing off Australian shores at a later date.

an outstanding job

Gentlemen:

Many thanks for the copies of the Special Home Laundry Edition of *finish* magazine. I am sure the members of our industry appreciate this outstanding job on our behalf.

Frank Breckenridge
President & General Manager
Automatic Washer Company
Newton, Iowa

NOVEMBER • 1953 *finish*

A photo trip through Hotpoint's new refrigerator plant

the 1,000,000 sq. ft. plant is geared to produce one refrigerator every 40 seconds; at rated capacity will use 60,000,000 lbs. of steel, 2,000,000 lbs. of aluminum and 428,000 lbs. of copper and stainless steel

WITH the initial production of refrigerators in their new 1,000,000 square foot plant in Chicago, Hotpoint Co., has now rounded out a full line of home appliances being manufactured in the Chicago area.

The refrigerator factory was designed for integrated manufacture with the range factory from which it is separated by conveyORIZED over-passes.

The plant is geared to produce one refrigerator every 40 seconds. At its rated capacity, the plant in one year will use 60,000,000 pounds of steel, 2,000,000 pounds of aluminum and 428,000 pounds of copper and stainless steel.

The cooling unit plant is laid out so that raw materials—such as steel, copper, aluminum and others—are received either by truck or rail and stored in one area on the extreme west side. This storage area is 40 feet wide and 400 feet long. An overhead crane is used to disperse raw materials into their proper departments. The flow of materials into production lines is from west to east.

The main assembly line in the refrigerator unit plant is 7000 feet long, and carries all component parts. This line goes directly into the component parts department. It was designed to minimize trucking or handling of parts in the assembly department and instead take the assembly line right to the department.

CONDENSERS

A new method of fabricating condensers permits the units to be produced at the rate of 150 per hour.

Two workers sit above one side of
finish

an automatic sliding rack and feed ready-cut radiating wire into a magazine. A rectangular form passes underneath the magazine picking up the wires. A spring-loaded lock prevents more than one wire from entering a comb in the form. When the bottom side is filled, an operator places the

formed tubing on top of the wires. The form then passes underneath a second loading operator and the top layer of wire is added. This process takes 3-4 seconds.

The complete form is fed directly into a press-type automatic welder which makes 2600 separate welds in





1. Conveyor line brings steel sheets to this giant press where refrigerator doors are formed. Conveyor carries formed doors away for further processing.



3. Showing final forming of evaporator and assembly of evaporator back into its proper place on the combination tangent bender and welder.

13-15 seconds. This is followed by final forming of the tube ends. The condenser is tested for leaks and then moved to unit assembly line.

EVAPORATORS

In the making of refrigerator evaporators, coils of aluminum are fed into a straightener and then into a shear, then automatically stacked.

The cut-out sheet aluminum is then sent to the evaporator wrap presses. Three 150-ton press brakes pierce, emboss and flange the flat sheets. The piece is next sent to an automatic washing machine for cleaning. Then aluminum tubing is set on the back of the evaporator sheet with brazing strips between the tubing and the sheet. It goes into a brazing furnace

which bonds the tubing to it. Then the evaporator moves to an acid pickle and water rinse, is air-dried and inspected.

Forming of the evaporator and assembly of the evaporator back into its proper shape is accomplished in a combination tangent bender and welder. The welder is laid horizontally across the tangent bender. The evaporator back is placed in the machine with the tube and sheet assembly. Two heads move upward bringing the evaporator sides around and curl them across the ends. The welding points move down and weld the ends together. The result is an evaporator with a back assembled in 15 seconds.

Final sizing of the evaporator and crimping of the back is done simultaneously on an expanding and crimping machine.

The equipment used in welding the header assembly to the evaporator and the copper-aluminum connector to the evaporator employs advanced argon welding techniques. The entire welding process is completely automatic.

All completed evaporators are giv-

NOVEMBER • 1953 finish

2. Fabrication of the evaporator takes place in one complete operation in just 12 seconds in a combination tangent bender and welder.



po-
ent



4. Liner fabrication is done on a 250-ton press which pierces and embosses the sheet steel before being sent to the next press operation.



5. Completed cabinet liner is removed from resistance welder machine. Equipment such as this speeds production, and insures uniformity of product.

en a high pressure leak test, prior to the anodizing process. An automatic machine is used for the complete anodizing process. After anodizing, the complete evaporator is inspected in a pressurized room to detect any minute leaks in the tubing or welded joints.

Main assembly conveyor

The main assembly conveyor line starts in the evaporator department, where it picks up the evaporator. It moves to the condenser and mounting frame assembly department, picking up these assemblies. From here, it moves to the tube fabricating department to pick up the heat exchanger and other tubing. It proceeds to a silver soldering operation where the unit is charged with an inert gas. Before the last joint is soldered, dry air is forced through the entire system at a controlled pressure. The air flow is measured to determine if the entire unit is functioning properly.

When the last joint is brazed, the cooling unit is charged with high pressure dry air and sent through a washing operation.

The unit is then submerged in a

high pressure leak test tank. As it passes through the tank, the operators watch for tiny air bubbles. As the unit emerges from the tank it goes to an automatic blow-off for drying.

Dehydration

The cooling unit now moves to what is probably the most critical process in the plant — dehydration

to remove all the moisture from the cooling unit. The unit remains on the conveyor line as it goes through this process. Vacuum carts are attached to the unit, with four units attached to each cart as they go through the dehydration oven. The carts travel underneath the oven on a conveyor line, with 82 carts used in the system. →

6. A push of a button, and a refrigerator cabinet is bent into shape on a tangent bender. Much equipment of special design is used in the plant.

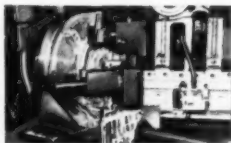


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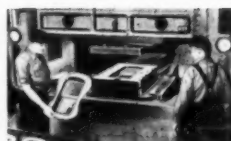
2 RUST PREVENTIVES

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Extreme Conditions Rust Preventive • Macco
Anti-Rust No. 9 Low Cost General Rust
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duce Scoring and Breaking • Mac Draw
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4 METAL CLEANING COMPOUNDS

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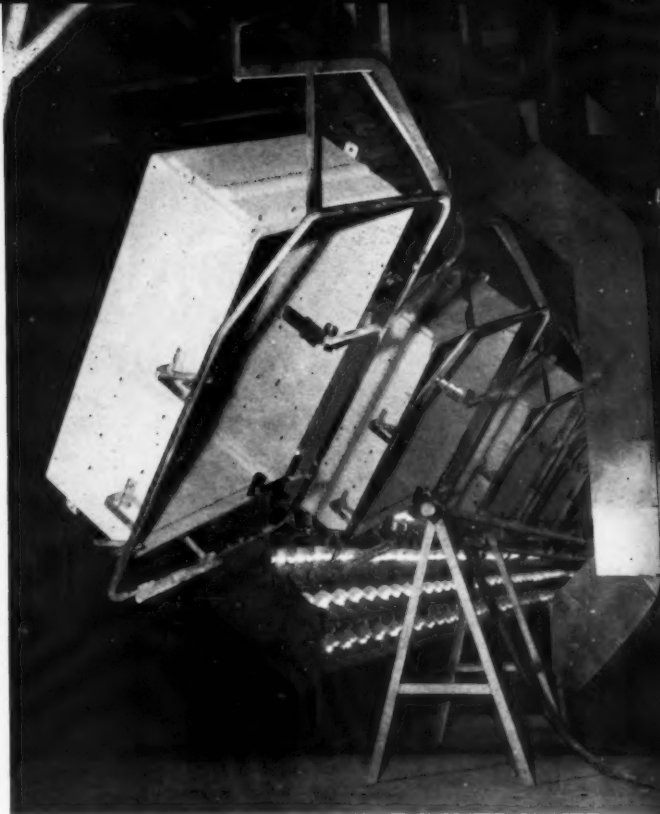


7. Following automatic spray pickling in a cable conveyor pickling machine, refrigerator liners are dipped in porcelain enamel ground coat slip.

Next the cooling unit moves down a conveyor line into a hood where there is a low concentration of helium. Here a mass-spectrometer, used for finding traces of helium, will detect leaks so small that it would take 200 years for one ounce of refrigerant to leak out. Passing the next station, the unit is automatically charged with oil and freon.

Then the unit moves to an automatic dip tank, is painted, and moves upstairs for wire harness attachments and sub-assembly parts, then to the test room. Here the cooling unit is subjected to two-hour tests to determine whether it will cool properly, check its frost ability and its frost lines. Some 150 units can be tested in an hour, all while still moving on

9. Brushing out the corners and reaming openings in the line is done while ware is being carried along on the conveyor line.



8. Infra-red oven is used to dry the ground coat prior to firing in an electric furnace. (The porcelain enamel cover coat is also dried in infra-red ovens.)

the conveyor line.

Following tests for sound and vibration, the unit moves on the conveyor to the make-up area prior to moving downstairs to the final refrigerator assembly line.

FABRICATION OF CABINETS DOORS AND LINERS

Fabrication of cabinets, doors and liners is done in a converted storage area in the adjoining range plant. Raw steel is brought to the plant by rail or truck, permitting an east to west operation. A 15-ton overhead crane loads and unloads the steel.

The plant is laid out with north to south fabrication lines, one for liners, one for doors, one for cabinets, and another for miscellaneous small parts. This allows Hotpoint to make each major part of the refrigerator in an in-line progressive manner.

Most of the raw steel is run through a leveler and then cut into the required sizes. Door steel goes into three 400-ton forming presses, then proceeds to flanging, piercing and welding machines. Cabinet steel is fed into a notching press, then through a rolling machine. It moves

firing
is also

10. View of interior of flow coating machine used to apply first coat on organic finished parts. The coating is then baked in an infra-red oven.

on through tangent benders, then to a unit for welding in the refrigerator backs.

Liner steel is fed into a 400-ton press for blanking, piercing and embossing. It then proceeds through special flanging and U-forming equipment after which it goes through an automatic washing machine. Resistance six-wheel seam welders weld the liners.

PORCELAIN ENAMELING

The liners are sent to the porcelain enameling department at the extreme north end of the building. After automatic spray pickling, liners are dipped in ground coat slip, and pass through an infra-red drying tunnel. They are then transported to the firing chains and sent through an electric furnace. After firing, the liners are placed on another conveyor which carries them through the white coat spray booth, and then through another infra-red drying tunnel. After wiping, liners are again fired. From the furnace chain, the liners are hung on a transport conveyor feeding the refrigeration assembly line in the main plant.

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11. Here cabinet shells and doors arrive from the primer coat process to be sanded and prepared for finish coating application

A storage conveyor provided for finished liners is used for scheduling purposes. The conveyor has a drop in the enameling department at the same location where the liners are placed on the transport conveyors. Another drop of the storage conveyor is located in the assembly plant.

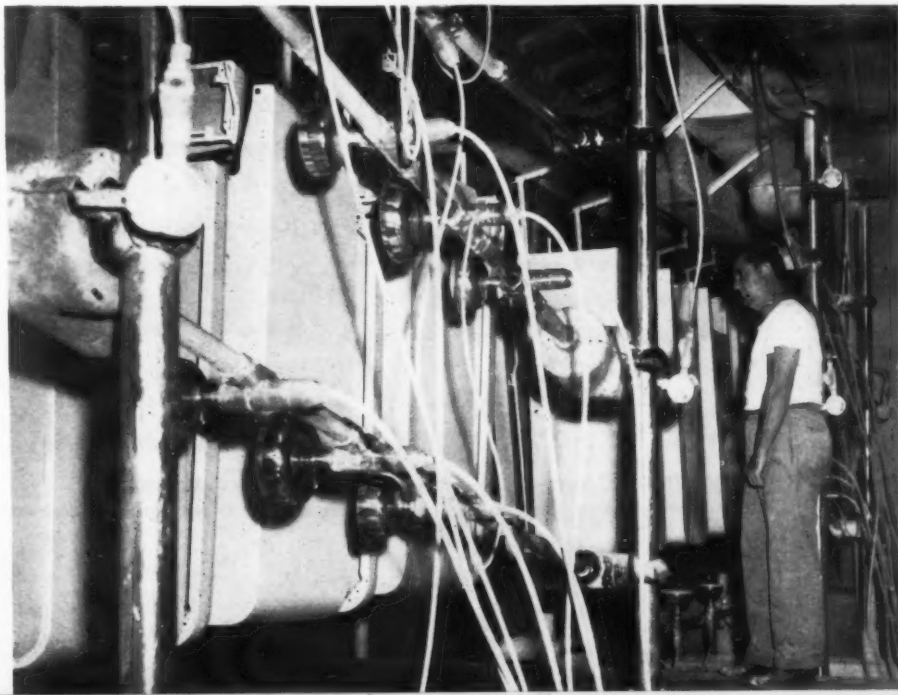
Vegetable pans are porcelain enameled, and a complete set-up is pro-

vided for this operation. The trays are carried by conveyor through all phases of this process. The hangers used on the liner transport and storage conveyor are designed to take both liners and pans.

SYNTHETIC FINISHING

Refrigerator doors and cabinets pass through a six-stage washing

12. Organic finish coat is applied electrostatically to "sets", including cabinet, door and base panel, which are carried on special grouping conveyor.





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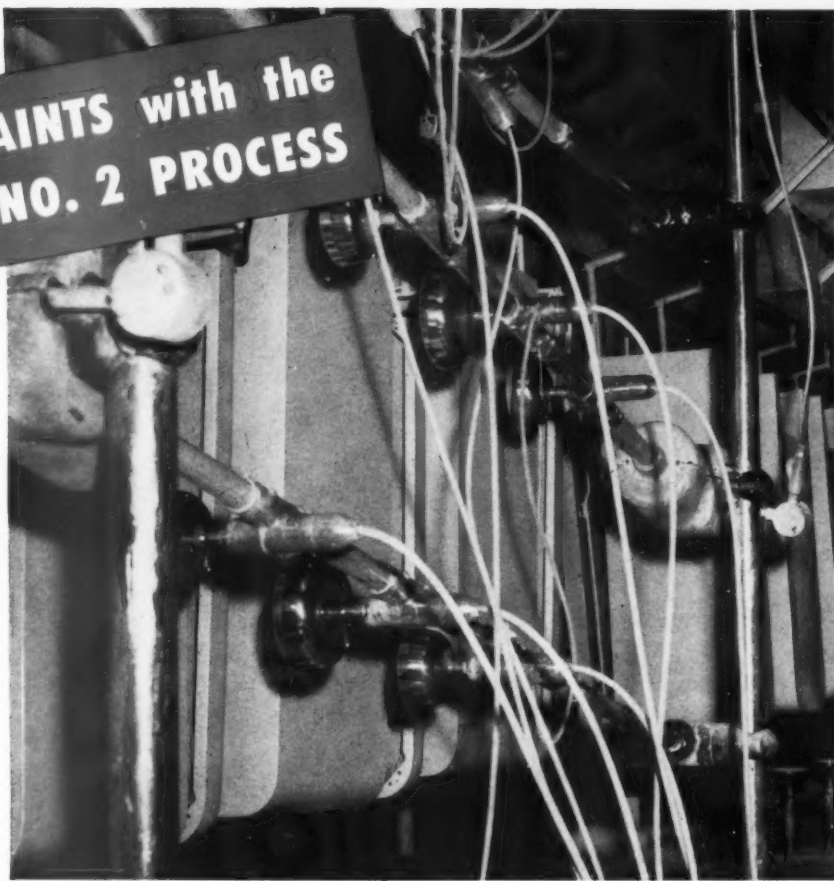
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One of two stations applying finish paint with No. 2 electrostatic spray in the new, Chicago plant of Hotpoint Co., Division of General Electric. Ransburg's bunching conveyor, with indexing in between paint stations, is used to properly space cabinets, doors, and inner door liners in the electrostatic coating areas.



● It's significant that the first completely new refrigerator plant in 20 years chooses the modern way—the RANSBURG NO. 2 PROCESS—to meet the exacting, high quality standards demanded in the finishing of HOTPOINT REFRIGERATORS.

Today, both large and small industrial plants all over the nation—and abroad—are relying upon the Ransburg No. 2 Process to provide higher efficiencies . . . increased production . . . uniform high quality painting at a fraction of former finishing costs.

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ELECTRO-COATING CORP.

INDIANAPOLIS 7, INDIANA



13. Left: Condensing unit assembly is completed when workers attach completed condenser to the condensing unit and mounting frame assembly.

14. Below: Part of condenser assembly forming operation is shown here—radiating wire for one form in place, the magazine loaded and ready for the next form, while operator pushes wire up ready to re-load. Spring-loaded lock prevents more than one wire from entering a coil in the form.

Packaging and handling operations are described and shown in the Safe Transit section, Page ST-6.

process consisting of an alkali wash, hot water rinse, cold water rinse, phosphatizing, cold water rinse, chromic acid rinse, and then into a drying oven.

A flow-coat machine automatically applies a resin primer coat, and a vapor chamber allows the doors

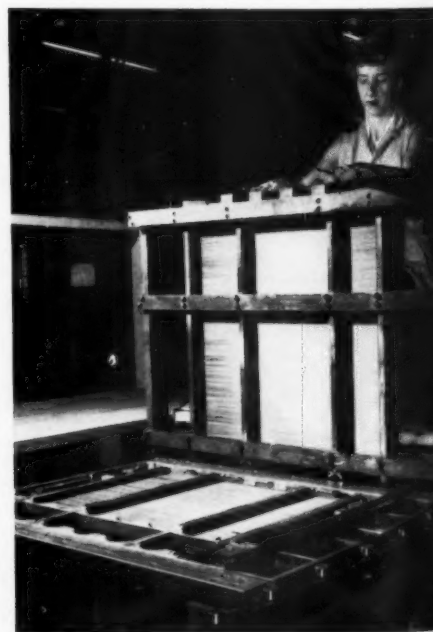
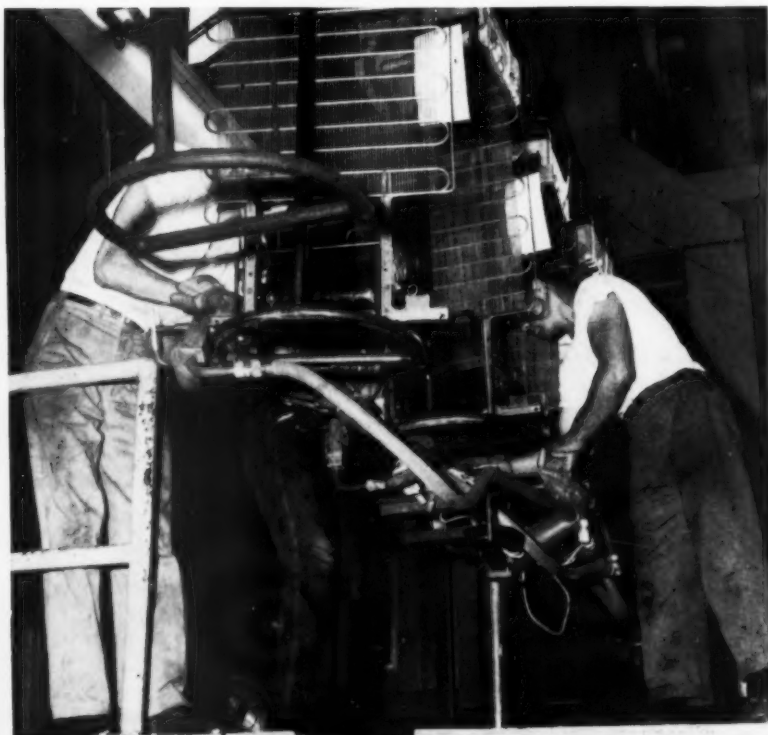
and cabinets to drain properly. Next the parts are sent into an infra-red bake oven.

The reinforcing primer coat is applied in a spray booth. Following another bake, doors and cabinets are allowed to cool for 20 minutes. Next the primer coat is sanded and the

parts are tack-wiped.

The conveyor, which carries both doors and cabinets at the same time, is now inverted by means of a specially-designed conveyor screw. From here the units are automatically transferred to a grouping conveyor which allows a four-inch space between each part.

While on the grouping conveyor, the doors and cabinets pass through an electrostatic spray booth. Here paint particles are charged with 90,-



15. Left: A vacuum is held on all units going through dehydration oven by means of specially-designed "vacuum carts." Four cooling units are attached to each cart and the cart travels along on its own conveyor line (below), under the unit conveyor line.

000 to 100,000 volts of electricity, and are sprayed from bell-shaped spinners which rotate about 900 rpm. The particles, being charged, are attracted to grounded refrigerator doors and cabinets.

The parts are now transferred to the regular conveyor line and pass through a touch-up booth, and then go through an oven for the final baking of the synthetic enamel. Following inspection, they are moved to final assembly in the main plant.

FINAL ASSEMBLY

As the doors, cabinets and cooling units move toward the final assembly line, one line takes the cabinets and doors to a section of the main assembly area where 27 different sizes of special insulation are inserted. Then the cabinets are moved to the main line, while the doors are moved to a sub-assembly line. This later merges into the main line, and the refrigerator moves on its way.

Following final assembly, the refrigerator passes through another leak test and another noise test. To test the sealing of the door and the cabinet in general, Hotpoint uses a very rigid test in which pressure is injected inside the cabinet. This test is made on an automatic instrument which either accepts or rejects the cabinets. Then follows final checking and general inspection.


16. Insertion of cabinet insulation is done on conveyor line. Some 27 different sizes of insulation are used.



17. Overall view of door assembly. Special fixtures to handle any size door are used. Workers use power tools to attach gaskets and hardware.

18. Special conveyor line "rack" brings finished cabinet doors & freezer compartment doors to final assembly line.





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6½ TO 4¾ HOURS BY
CHANGING TO...

Coors
High Density
Grinding Balls!"

...Mike Bingesser, millroom foreman,
Magic Chef, Inc.

Mike Bingesser, millroom foreman, Magic Chef, Inc., pictured above, tells how he cut frit milling time from 6½ to 4¾ hours, simply by changing to COORS Alumina Ceramic Grinding Balls.

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- High Strength — No Chipping or Cracking



Al₂O₃

Wash-primer metal conditioner protects metal office partitions

AT THE PLANT of Virginia Metal Products Corp., Orange, Virginia, the paint department is employing a new metal pre-treatment in its finishing operations. Vinylite resin-based metal conditioner is applied as part of a three-coat system to movable metal office partitions.

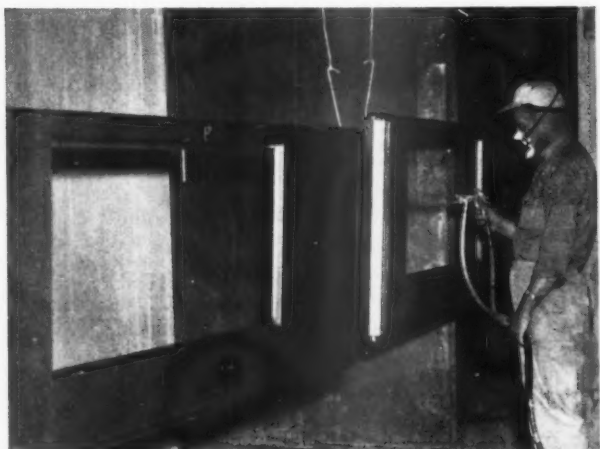
The three-coat system for full-wall or low-height metal partitions consists of a wash primer, a primer surfacer and semi-gloss baking enamel.

Serving as both a metal conditioner and wash-primer at the same time, the pre-treatment is said to resist rust and corrosion, and improve the durability and adhesion of finish coats. It is reported that excellent adhesion can be gotten for almost all types of baking enamels and primers.

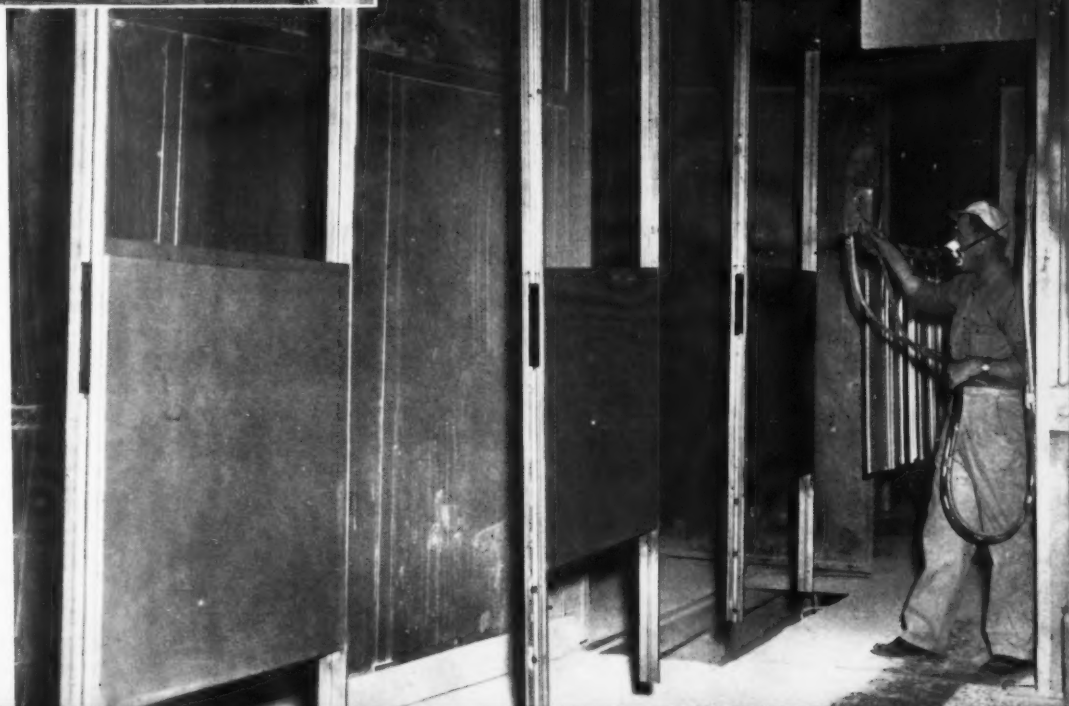
Applied by brush, spray, roller coat or dipping, a film of wash primer approximately 0.1 to 0.3 mils

thick is provided. The wash primer fits easily into conveyorized production, with an air-dry of 15 minutes, or one minute under infra-red or other force-dry equipment.

The rust-inhibitive and anti-corrosive properties of the resin-based wash primer are said to eliminate blistering of enamel topcoats even under extreme conditions of humidity, salt air or moisture. Where insulation or sound deadening material in the metal panel prevents the use of a water-wash system, the new primer can be used without moisture effects on the finish. The same advantage is said to apply to any fabricated metal having pockets where water dip or spray treatment would trap moisture.

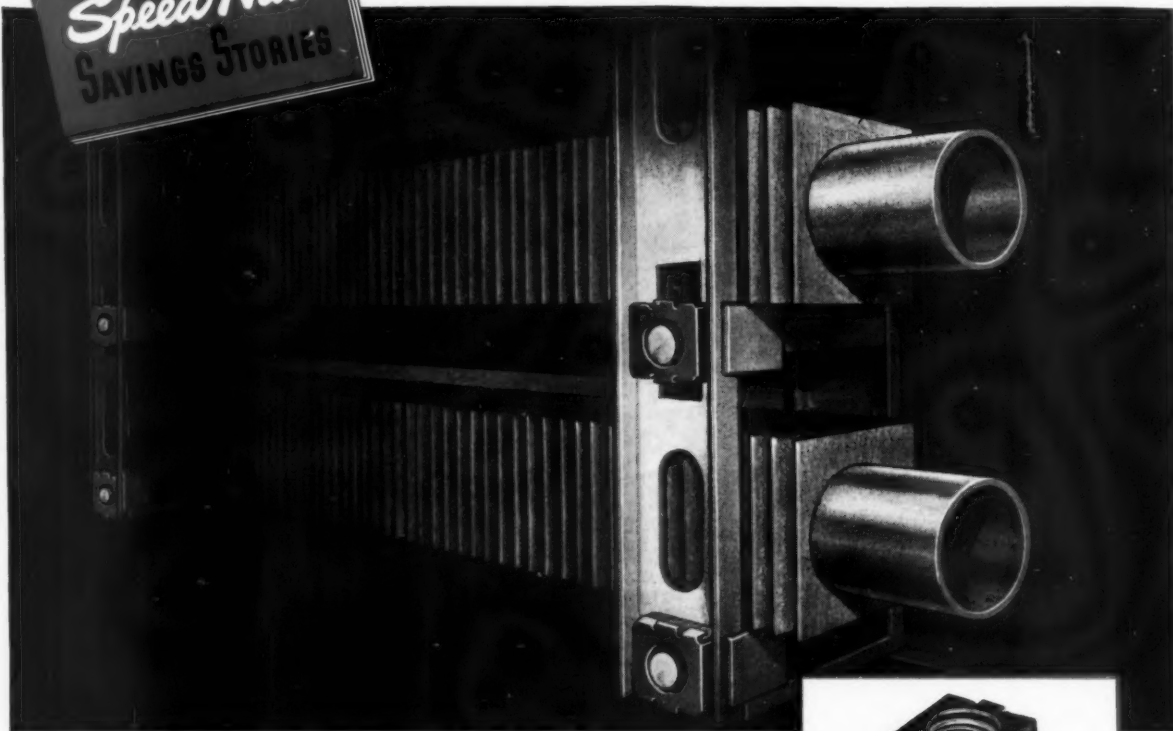


Photos show two types of metal office partitions being processed at the plant of Virginia Metal Products Corp.

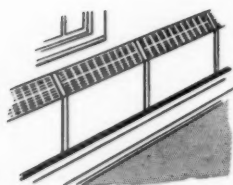




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Design for salability— a key to industrial success

Part II—appliance industry offers a case study on design vs. styling

by *Dave Chapman* • SOCIETY OF INDUSTRIAL DESIGNERS, DAVE CHAPMAN, INDUSTRIAL DESIGN

LAST year more than half of the dollars spent on washing devices for the home were spent on automatic equipment. It has been DESIGN, not styling, which has made it possible to move the automatic washer from the basement to the utility room or to the first floor. It has been DESIGN, not styling, which has made it possible to build this equipment into existing cabinet structures. . . .

It is important to note that the average dollar purchase of a home laundry device has moved from approximately \$70 to more than \$200. Even considering a 100 per cent inflation of the dollar, we have more than doubled the dollar activity in

the washing machine industry by revising and refining the consumer's method of washing fabrics and revising the consumer's attitude toward the net worth of the product. Parenthetically, there are important social implications in these design developments. We are employing twice as many men in the industry. We have almost completely done away with the "blue Monday" wash day and substituted a casual and incidental day-to-day laundry maintenance operation.

This is not an isolated case. I will briefly mention enough of them to point out the fact that the pattern runs true, by and large, in our man-made world.

We have seen the old-fashioned \$1.95 "turn-over" toaster almost entirely replaced with the oven-type, automatic or "pop-up" toaster at \$10 to \$20.

We have seen refrigeration change from inefficient, noisy, fabricated structures to efficient, low-cost structures which, by the way, are long overdue for the work of further structural and functional redevelopment.

We have seen rotary sewing machines replace the long shuttle-type.

The evolutionary aspects of our industries have made possible the existence of design as a profession. . .

Some of these comments point out important invention in industry. It



Fruit juicer — Through application of design principles, the functional practicality of this juicer, by National Die Casting Co., was improved over the earlier model. It was given a form that is easily cleaned due to the smooth simple lines that are sculptural in character.

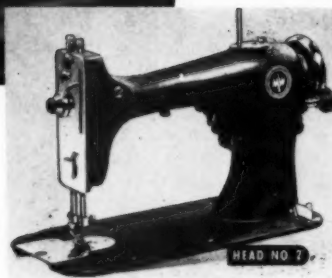
Wall heater — In the design of the Saf-Aire wall heater for Stewart-Warner Corp., major consideration was given the development of a parts-production system to meet the need of a line with a range of 4 sizes. Solution of problem allows for common use of stamped top and bottom panels and simple brake-formed side panels in varying sizes. Top and bottom grills are identical and reversible. Since use of a darker tone was indicated by the nature of the heat-resistant finishes on louvered panels, this direction was used in presenting a two-tone harmonious effect with light and dark beige.





Sewing machine — (before and after)

During the war years, when sewing machines were not being manufactured, Dave Chapman and engineers of National Sewing Machine Co. worked to develop a completely new machine for the post-war markets. This machine is the result of their work. First a complete analysis of the industry was made by Armour Research Foundation. Then, an ideal from the standpoint of the merchandiser (Montgomery Ward & Co.) was defined and the designer and engineer worked toward this definition. Production of the machine required complete retooling, offering a quieter and more efficient machine with noticeably less vibration, as well as a machine that will appeal to the customer . . . with visual demonstration features for the buyer such as localized controls in the dashboard, easier access to the bobbin, fine finishes in baked enamel and chrome die castings, better lighted work surface and more ingratiating color arrangements. Through design and engineering efforts, it is generally a simpler, easier machine to use than previous models.



must not be suggested that the designer is an inventor or, specifically, an engineer or a production man. He is not a merchant. Actually the designer must use the tools provided him by these men, provided by research and engineering, to discover and evaluate new horizons for development for his clients in industry. *He is, perhaps, the best possible link in the raw material, manufacturing, merchandiser and consumer chain, and one who is able to tangibilize the unspoken needs AND WANTS of the patient public.*

Snob appeal taken out of design

It has been said that 85 per cent of human perception is visual. While this figure is not based on scientific statistics, it is certainly not far from accurate. The visual aspects of the designer's work then become the most positive form of communication between the buyer and seller. Through the many media of communications — newspapers, magazines, television, radio, theater — the American public has been educated to use their prerogative of choice as an expression of their taste, their individual way of living. *The snob appeal has been taken out of design, making it a major force in selling.*

Although we have been talking this doctrine for years, our audience may have felt that the designers were guilty of bias. One of the leading publishers in the trade field, Charles

E. Whitney, of *Interiors* magazine, however, recently sent me a complete brochure his organization had prepared titled "Design . . . The New Approach to Selling." Mr. Whitney had this to say to his readers:

"There has been a revolution in taste all over America. As the revolution picks up pace, DESIGN is no longer a snob appeal, but an expression of taste, a way of living and a major force in selling. Design is everywhere. Just as fashion sells what people wear, design sells everything America lives and works with . . . cars and carpets, tables and tractors, plastics and plumbing. New products must do more than WORK better; to sell they must LOOK better. All this has opened up a new way of selling . . . through design."

Mr. Whitney was again throwing emphasis on the visible end-product of the designer's work — the aesthetics of design for saleability.

Today's replacement

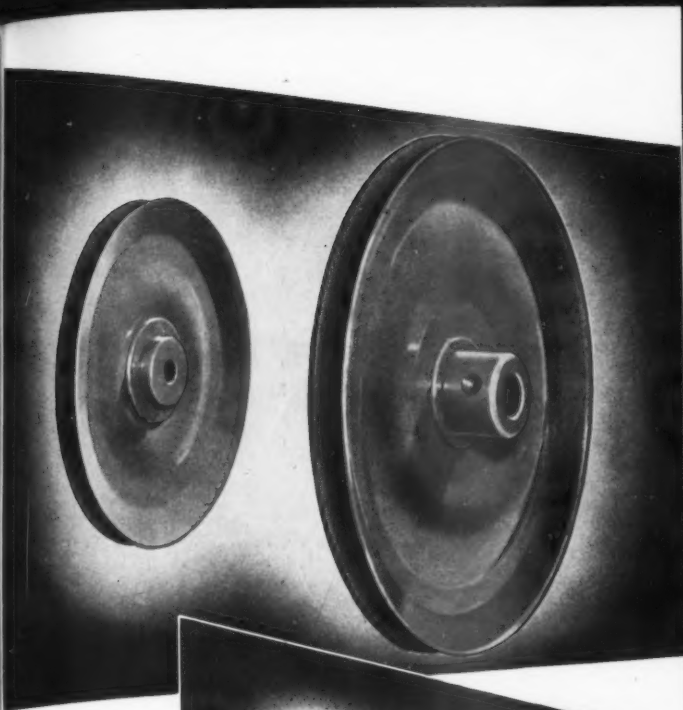
of old-time craftsmen

Prior to the Industrial Revolution, a skillful segment of mechanics and artisans with the tools and materials at hand added some emotional increment to those utilitarian objects which they made so that the result of their efforts had emotional values beyond the purely utilitarian. We call the products of their crafts works of art. The great cultural loss is today being replaced by the efforts of the industrial designer.

The craftsman, schooled to utter understanding of his tools and material, controlled so deftly the stroke of his tool as to create a response in the user and viewer of his product. This he had to achieve without loss of the net utility, often contributing to the utility of that which he made. Today the designer must understand the tools and processes made available to him by industry. *He must, like the craftsman, have a profound understanding of the nature of materials and the use to which his designs will be put. Then, and only then, can he design with integrity.* Then he may introduce into the stroke of the punch-press or the jaws of the molding machines characteristics which may be duplicated thousands of times to his satisfaction. The designer, then, is beginning to fill the cultural loss of the craftsman.

Being as valuable as they are as a selling force, style and fashion appeal need not be sacrificed in order to maintain design integrity in a product. But design appeal at its best is best is built on a more solid foundation than the addition of chrome strippings, gleaming finishes and smooth contours. Getting back to

to Page 84 →



Two of the various types and styles of pulleys produced by Danielson. For production economies, Danielson stamped, spot welded pulleys can't be beat.

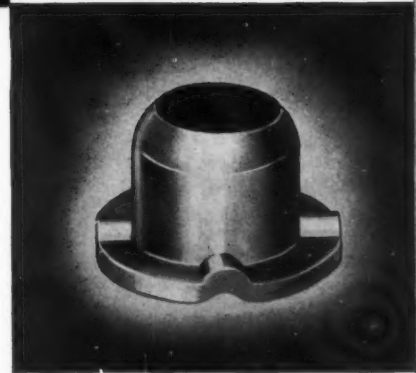


CASTER SOCKETS AND BRACKETS ...OUR SPECIALTY...

Here are a few of the types of caster sockets and brackets manufactured by Danielson. All are produced with extreme economy to exact specifications. Let us figure on your needs.

Our plant is specially geared for this type of work where high production and low cost are a prime factor and yet quality and precision workmanship are always our goal.

Our Press Department is equipped with presses ranging from 5 ton to 300 ton capacity, and specializing in deep draw work for Appliance and other Metal Products Manufacturers. Other services include: Shearing — Circle Shear — Spot Welding — Arc Welding — Silver Soldering — Hydrogen Brazing — Polishing — Degreasing — Painting — Assembly — and our complete Tool and Die Department will furnish precision tooling for your own fabricating department.



Danielson stamped WELD NUTS for use on automatic washing machines, dryers, refrigerators and other similar products requiring leveling at point of installation. Danielson WELD NUTS made in a multi-sequence stamping process are equal in durability and strength to any machined weld nut but cost less.

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article I (October, 1953)

Silicone finishes for high temperature applications.

article II (November, 1953)

High temperature ceramic coatings and their application.

article III (December, 1953)

Cermet coatings—possible answer to ultra-high temperature problems

Research has accomplished much

When we see a modern appliance on the sales floor or in the home, or a coin-operated machine, a piece of metal furniture, a cabinet, a bathtub, or even a metal casket, we are prone to think of the finish (if we think of it at all) as a means of beautifying the exterior for use and for salability.

There is another factor of at least equal importance in the relationship of a "finish" to the metal product — its qualities for resisting corrosion and, in many cases, heat as well. There can be no more important feature of *any* metal product than its finish — the feature that people *see*. That's why manufacturers, from president to the man in the shop, learn to respect the importance of the finishing department.

During recent years there has been a great deal of research in all types of coatings for the specific purpose of developing greater HEAT and CORROSION resistance for both conventional and specialized products, and for both commercial and industrial applications.

Important advances have been made, particularly in the fields of industrial organic and ceramic type coatings.

finish has reported these developments as progress is shown. With this issue is started a series of three articles pointing up this progress in the continuing effort to master the harmful effects resulting from extreme conditions of heat and/or corrosion. We welcome reader comment or suggestions for the development of later editorial material on the subject.

High temperature ceramic coatings and their applications

prepared exclusively for finish by the engineering staff of
Solar Aircraft Company, San Diego, Calif.



Ceramic coatings used on metals exposed to high temperatures are a new means of conserving strategic materials and of extending metal life. They are, therefore, of intense interest to many branches of the Armed Forces as well as to manufacturers engaged in defense production.

In addition, these ceramic coatings open a new field to porcelain enamellers — a field with many opportunities for profitable activity, but one differing in many respects from conventional enameling procedures. It is the purpose of this article to tell briefly the story of ceramic coatings for high temperature protection; to outline to enamellers some of the procedures necessary and the hazards to

be met; and to describe the experience of Solar Aircraft Company in this field as a case history for the guidance of others.

First, however, it should be pointed out that present facilities for ceramic-coating the hot parts of jet engines are inadequate to meet the future demands of engine makers. If the defense program is not to be curtailed, the job enameler must muster the techniques of applying these new high temperature coatings.

Ceramic coatings for high temperature protection

Through the years, materials capable of resisting increasingly higher temperatures have been needed by industry, to cope with advances in engine design and with the spread of high temperature processing in the petroleum, chemical, food and other

fields. At the same time the nation has been faced with an alarming scarcity of the alloying elements used in super alloys, so that the most obvious approach to industry's high temperature problems — the creation of better heat-resistant alloys — has been largely ruled out.

While there are several approaches to the overall problem, the one that has met with the greatest success has been the development of ceramic coatings for metals that would (1) extend the service life of alloy steels materially under high temperature conditions by retarding or preventing oxidation and corrosion; or (2) allow the substitution of coated metals less rich in strategic elements without sacrificing service life. In either case, the net result is a saving in scarce alloying elements.

Several government agencies have

An important step in high temperature ceramic coating is careful cleaning of the object to be coated. Photo shows a turbo-supercharger nozzle box being sandblasted preparatory to coating.



The actual coating of parts may be accomplished by spraying or dipping. Here an operator is shown spraying a ceramic coating on a turbo-supercharger nozzle box.





Parts are fired in a furnace at temperatures up to 2000° F. for a time varying from 10 to 30 minutes. Photo shows coated inner combustion chamber liners for jet engines being placed in furnace.

sponsored work along this line and much valuable work was done. Solar Aircraft Company, with a wealth of experience in high temperature metallurgy (having built the world's first stainless steel aircraft exhaust manifold in 1930), was quick to see the possibilities in high temperature ceramic coatings. Solar's research started ten years ago; the first satisfactory production coatings were developed in 1948; and since that time Solar has perfected a series of new and unique coatings as well as the techniques for the proper application of these coatings and the processing of the coated parts. Today, Solar is coating large production quantities of a variety of jet and piston engine components for aircraft, and is also coating (within limits imposed by defense needs) a variety of items for civilian industries.

Briefly, a satisfactory ceramic coating for high temperature use is a thin, vitreous, semi-mat coating which is bonded tightly to the surface of the metal, sealing it against the effects of high temperatures and combustion products. The coating's smooth surface offers minimum resistance to the flow of gases which, in addition to retarding oxidation, miti-

gates hot spots to protect the parent metal against cracking and warping under high temperature operating conditions. The coating should have extreme flexibility and bonding strength, so that metal sheet as thin as .001 inch can be protected. It should be versatile enough to allow the coating of standard parts—which may embrace various types of welds, various alloys, and various thickness all in the same part—if possible without requiring design changes to the part if it heretofore has been produced uncoated.

After satisfactory high temperature ceramic coatings are produced, the application proceeds in this way:

Parts to be coated must be carefully cleaned by procedures best suited to them—which may involve acid etching, sand-blasting, or other methods. The parts are then coated by dipping or spraying on a liquid suspension of ceramic, and usually one coat is sufficient. The coated parts are next oven dried. Finally, the parts are fired for a pre-determined period, allowed to cool, and inspected.

Problems of commercial enamellers

There are many differences be-

tween coating precision-made aircraft parts with high temperature ceramics, and coating a production run of such items as metal signs or kitchen ranges with porcelain enamel.

(1) *The coating must be selected to match the alloy of the part.* In the case of the Solar coatings, there are several distinct types, each adapted to a particular class of alloys. One specific coating protects stainless steels of the AISI 300 and 400 series, Inconel, and the "super alloys"—but this particular coating will not produce a completely satisfactory bond on low alloys such as the carbon steels. In other words, commercial enamellers must be certain that they have correctly chosen the coating for the metal used.

(2) *The coating must be selected to produce the desired effect.* While the high temperature ceramic coatings usually display certain basic qualities—such as good adherence, thermal and mechanical shock resistance, and oxidation resistance—other qualities may be required for specific applications. Particularly good gall resistance or high corrosion resistance may be required, for example. Therefore it is necessary to match the coating to the alloy and to choose a coating that provides the desired effects and gives optimum service life under the specific operating conditions to which it is subjected.

(3) *Successful application methods must be selected.* After the coating is chosen, the geometry of the part must be studied. If it is of simple construction with no laps or intricate recesses, and if dimensional tolerances are large, the part may be dipped. If the part is of complex geometry and tolerances are small, spray application should be used whenever physically possible. Slips of almost slurry consistency have been used for dipping. In other applications, the slip was maintained at minimum viscosity and sprayed to achieve complete coverage and control of the coat thickness.

(4) *Firing temperatures are important.* In the case of simple parts with large tolerances, these can be fired at high temperatures with minimum firing jiggling. For parts of

complex geometry with small tolerances, firing temperatures must be carefully controlled to prevent distortion or to reduce it to a minimum. In some instances special firing jigs must be developed to minimize distortion. For every application, firing temperatures and the time necessary to properly fire the coating must be determined.

To successfully solve the problems outlined—and others that may be encountered—it is suggested that the commercial enameler set up a small laboratory for the tests and controls necessary to insure high quality production runs. Here the initial units can be coated and delivered to the engine manufacturers or Government organizations for type tests. Even after the production line operation has started, it is necessary that the laboratory maintain constant vigilance, checking on slips and application to insure a minimum rejection rate.

Production line procedures

Experience has shown that standard porcelain enameling methods generally cannot be followed in applying high temperature ceramic coatings without poor results. Procedures must be adapted to meet high temperature problems.

An essential requirement is cleanliness. The fabricated parts must be carefully cleaned. All ink, grease, oil and other carbonaceous material

must be removed, preferably by vapor degrease.

A thorough inspection of the part following the cleaning process is necessary. At Solar we have asked the production department to omit oils and greases during fabrication of the part wherever possible, to obviate difficulties in removal. Heat scaling of stainless steels at temperatures from 1650 to 1750° F. from three to five minutes, followed by acid pickle, is allowable, but is not recommended for parts of complex geometry because of the danger of acid collection in blind holes and under lap joints.

Following degrease, the part should be thoroughly sandblasted at a pressure below 30 psi with a grit size of from 30 to 60 mesh, then thoroughly dusted with a filtered air blast. To prevent contamination, the sand should not be used for any other operation. From processing through coating, operators should wear clean cotton gloves while handling the part to prevent smudges.

Another requirement for the successful coating of precision components, but not as critical in the commercial field, is the control of coating thickness. For this reason, spray application is recommended for complex parts.

For some parts, dip coating is more rapid than spraying. By adjusting the specific gravity and set of the slip for good draining, parts of regular shape such as reciprocating

engine exhaust system headers can be coated satisfactorily. The obvious production line advantages of dipping warrant further investigation. One problem in dipping is caused by surface tension of the water used in the slip. In laboratory tests, other fluids have been used to replace water with excellent results. In production, however, these fluids suffer from numerous disadvantages—high cost, rapid vaporization, inflammability, and toxic fumes.

These comments on the problems of commercial enamellers entering the high temperature ceramic field have purposely omitted the special obstacles met in coating mild steels. Work is proceeding rapidly on the development of special coatings for mild steels, and on application techniques, but production line methods require still more study.

Solar is continuing work on the development of new and improved coatings; on production coating of jet and piston engine parts and on experimental coating of items for a variety of civilian industries. In the latter case, applications are numerous in the petroleum refineries, chemical plants, processing systems, and in many other lines.

We believe that the future of high temperature ceramic coatings is assured and that this new field will open wide opportunities for the commercial enameler, if he carefully adopts the necessary techniques.

A corner of the Solar processing department in San Diego, where work is being done on inner combustion chamber liners for jet engines. Those at the right are coated; those at the left and in the background are uncoated.



Gas plating—its possibilities in industry

by John E. Hyler • JOHN E. HYLER & ASSOCIATES, TECHNICAL WRITING AND RESEARCH

MUCH interest has developed in gas plating during the last few years. The gas plating process has to do with use of volatile carbonyls and other volatile metal compounds. Metals are deposited on the surfaces to be plated by decomposition (effected thermally) of these metal compounds in an inert atmosphere.

Like various other processes discovered and allowed to lie dormant because they are not considered economically feasible or practical at time of discovery, the phenomenon of gas plating was encountered over fifty years ago. Original work on present-day plating, however, dates to a time shortly before 1940.

Like high vacuum plating, gas plating may be used to advantage for plating non-metals and non-conduc-

tors. Gas plating, however, is used for depositing much heavier coatings than can be applied by the high-vacuum process. Gas plating may be used for plating tile, paper, plastics and like materials. Inside surfaces of parts, also irregular surfaces, may be plated to advantage. Films of high quality are deposited speedily. Sponsors of the process have cited a case in which over 13 pounds of nickel, approximately 1/32" thick, having a tensile strength in excess of 90,000 pounds per square inch, were deposited in less than an hour on a mold facing, having a diameter of around 30 inches.

Specific applications

The process makes possible continuous straight-line plating of such

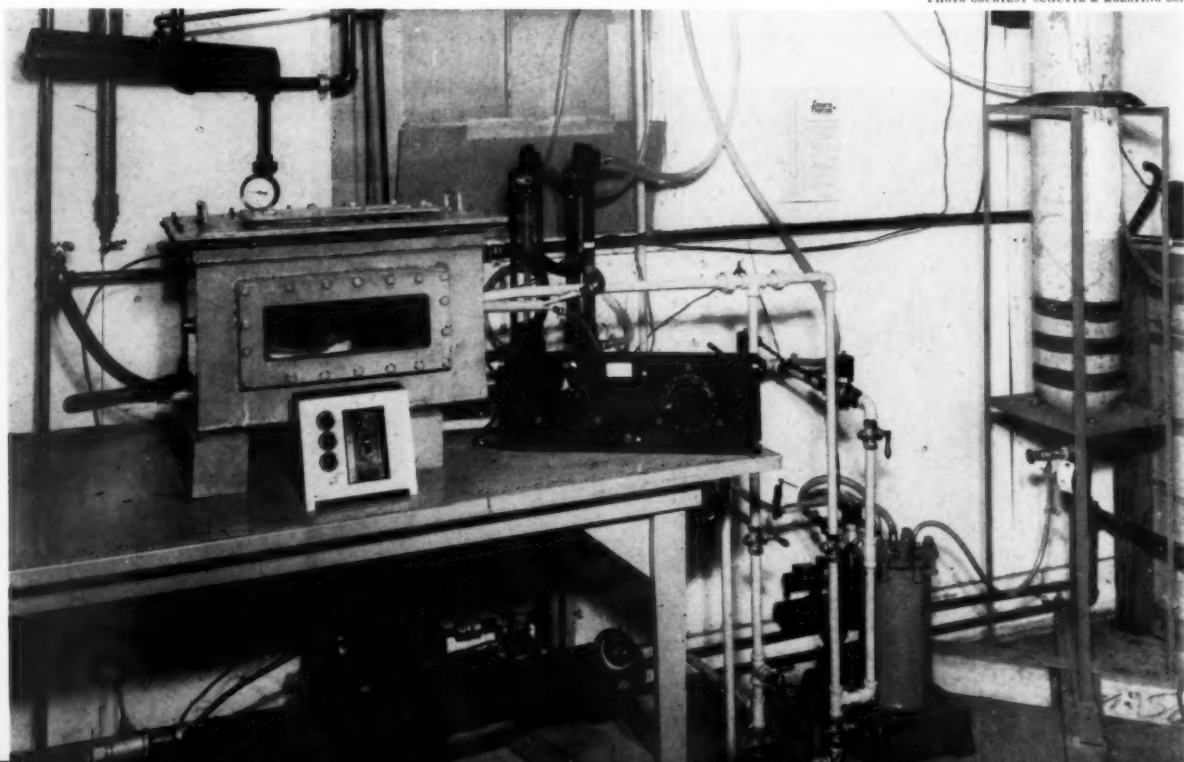
materials as wire, cable, metal plate, sheet material, or screen. It seems to be a particularly efficient method for plating parts made by powder metallurgy. Such parts require plating, and when immersed in a solution such as is required for electroplating, part of the plating solution becomes entrapped in the porous structure of the work. Later, this trapped solution may cause either corrosion or blistering. So far from being subject to these shortcomings on powdered metal parts, it is believed that gas plating deposits metal on such parts interstitially, penetrating the pores, thus actually improving physical characteristics of the parts.

Speed at which metal can be deposited by this process is a factor of

to Page 56 →

This illustration shows pilot or experimental equipment for gas plating, on which very low flow rates are necessary. One flow meter is used to control the flow of carrier gas, usually carbon dioxide; another controls the flow of nickel-carbonyl-carrier-gas mixture as it comes from a carburetor. These two materials are fed into a dry plating chamber in a controlled manner. Ratio between the gases determines (to a considerable degree) the character of nickel films obtained, and the rapidity with which those films are deposited.

PHOTO COURTESY SCHUTTE & KOBERTING CO.



New**Supplies and Equipment****K-10. Brush for cleaning leader-pin holes in die sets**

New This new leader-pin brush, for cleaning leader-pin holes in die sets, is claimed to help maintain die accuracy and lengthen

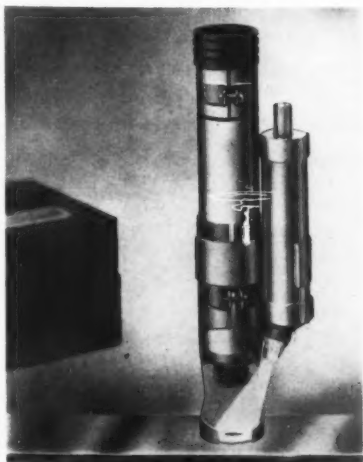


the life of die sets. Brush bristles are resistant to acids and alkalis common to oil, naphtha, detergents and industrial cleaning fluids.

As the bristles wear, the brush may be used for smaller and smaller leader-pin holes until it is completely worn out.

K-11. Microscope-reader for Brinnell-type hardness testers

New A new low-cost Brinnell microscope-reader, for the measurement of the diameters of indentations made by the ball indentors of all Brinnell-type hardness testing machines, provides one of the most accurate methods for determining the

**More Information**

For more information on new supplies, equipment and literature reviewed here, fill out the order form, or write to us on your company stationery.

hardness of ferrous and non-ferrous metals. It is also said to provide an absolute method of checking the accuracy of hardness testing machines themselves. The microscope-reader has a magnification of 20 diameters. Total length of the scale is 7.0 mm. Diameter of the field of the microscope is 7.5 mm.

K-12. High heat masking tape for use on treated metals

New A new pressure-sensitive tape for the metal finishing industry — for high heat masking use on such treated metals as anodized aluminum, pickled steel and dichromated magnesium—is designed for masking use in oven temperatures up to 325° F. It is said to be capable of withstanding "much longer bake cycles than previously possible."

In addition, the tape has the ability to remove cleanly from anodized aluminum and other treated metal surfaces without leaving adhesive deposit.

K-13. Tantalum strip available for use throughout industry

New Tantalum strip, precision-rolled to very close tolerances and to thin gauges and foils, is now readily available for use throughout the appliance and other industries.

Tantalum, described as "an extremely non-magnetic and corrosion-resistant metal, with tensile properties comparable to cold-rolled steel", is custom rolled in strip up to 6" wide and down to .0005", to tolerances as close as $\pm .0001$ ". The strip is available in any quantity from 1 pound to thousands of pounds.

K-14. Magnetic chip retriever for hard-to-get metallic particles

New A new magnet, made of "super-magnetic alloy", removes chips from blind drill and top holes on production lines, and in



assembly work, both electrical and mechanical.

Tool and die men will find the unit very useful in formal shop work. Assemblers and inspectors will find the unit useful to test coat of surfaces for magnetic properties of the under material.

The unit can be carried in the pocket, is no larger than a fountain pen, and is mounted in a fibre non-conductive case with a pocket clip.

K-15. Quick, detachable connection for air-powered tools

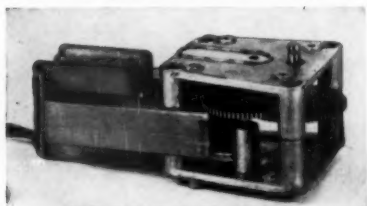
New A new compact, quick-detachable air connection is said to provide almost complete free flow of air to air-powered tools. Labo-



ratory tests show a pressure drop of only 5% with this new coupling. The air connection quickly snaps on or off a spray gun or other air-powered tool with a simple push or pull action. Automatic air shut-off assures no loss of air when making or breaking the connection.

K-16. Shaded pole induction motor for rotisseries, barbecue turners, dispensers, vending machines, etc.

New This new shaded pole induction motor with compact gear train measures $4\frac{3}{4}$ " x $2\frac{1}{2}$ " x 2" overall, and is geared to 6 rpm with a torque of 20" lbs. It operates



on 110 volts ac, 50-60 cycles only. Other models are available from 1 rpm to 1155 rpm.

The motor can be put to many uses, including actuators, moving displays, rotisseries, barbecue turners, dispensers, vending machines, and other similar applications.

K-17. Coiled stock coating machine speeds fabrication work

New This new coiled stock coating machine automatically feeds materials from the uncoiler, deburrs the edges, coats both sides with



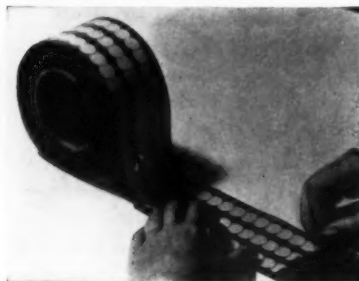
drawing compounds, and feeds the press.

K-18. New pickling process eliminates pollution and corrosion of equipment

New A new pickling process, utilizing "Ferr-O-Neil" acid surface conditioners, promises to be a great aid to plants interested in elimination of stream pollution and corrosion of adjacent equipment and buildings, as well as the hazards of harmful fumes. Furthermore, the life of pickling solutions, using the new acid surface conditioners, is said to be indefinite.

K-19. "Kwiky" masking discs for spray finishing operations

New These inexpensive "Kwiky" masking discs were designed to help reduce overhead costs of spray paint masking. Each disc



is slightly overlapped by the next so when one is removed from the role it automatically raises the edge of the next disc, thus providing a lip for easy grasping.

A string of discs may be removed from the crepe paper liner roll in a connected strip for fast application to work requiring several of one size. They are available in diameters from $\frac{1}{4}$ " to 4" by sixteenths.

K-20. Recording spectrophotometer

New A redesigned G-E recording spectrophotometer now furnishes a rapid color analysis by drawing a complete didymium curve in 54 seconds with photometric accuracy of 0.5 per cent, wave length accuracy within 1.0 millimicron, and photometric precision within 0.2 per cent.

A range of 380 to 700 millimicrons has been provided in anticipation of any new colorimetric standards. The

spectrophotometer has been simplified so that a semi-skilled person can operate the equipment with relatively little instruction. Routine operation is largely automatic.

K-21. Small lamp components featured on citation-winning dryer

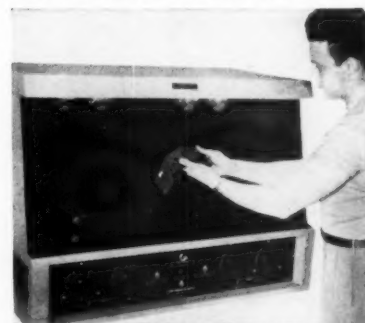
New This Norge Time-Line dryer (and its companion automatic washer) won a citation for good design from New York's Museum of Modern Art this summer.



A feature, considered "eminently practical", are the two small lamps strategically placed to make controls and contents easily visible at all times. The socket assemblies for the lamps were furnished by specialists in the design and manufacture of miniature lamp assemblies.

K-22. Color comparator reproduces nearly true north light

New Color-matching accuracy 24 hours a day in any weather can be achieved with this comparator, said to be the first color matching light developed to achieve the nearest reproduction of true north light. The unit operates from a 110-120 volt, 60 cycle ac source, and consumes about 410 watts.



New Industrial Literature

111. Data sheet on Thermistors for domestic oil burners

New Latest information on methods of using Thermistors—heat-sensitive electrical resistors with negative temperature coefficient—for time delay, warning circuits and domestic oil burner circuits is contained in a new Carboly data sheet.

112. Glass part applications

New This richly illustrated catalog shows a wide variety of glass part applications in the appliance and other industries. To aid



the design engineer in taking advantage of the special characteristics of glass, 21 case histories are recorded. The catalog also outlines the physical properties which give glass almost unlimited design potential.

Among the items discussed are nameplates, dials, appliance parts, instrument faces and panels, television bulb parts and other electronic components, lenses and reflectors of all sorts.

113. Bulletin on gas oven thermostats and valves

New A newly-revised product bulletin describes controls designed for use on residential and small commercial gas ovens where a combination thermostat and gas valve is required. An important feature of the control, listed by AGA, is that it is easily interchangeable with thermostats found on most present-

day gas ranges. In addition, the valves are suitable for manufactured, natural, mixed and LP gases.

114. Catalog on new horizontal hole punching units

New This brand new catalog fully illustrates and describes a line of independent, self-contained horizontal hole punching units. These units are designed to punch holes in curved and straight flanges, rims and angles and similar shaped and formed work. Punching holes in the side of work is made possible by designing these units so that the punches move back and forth horizontally rather than up and down.

115. Brochure on lubricating entire conveyor lines automatically

New How to automatically lubricate entire conveyor lines—trolley wheels, chains, drives, carriers and rollers—without stopping the line, thus eliminating shutdowns for lubrication, work spoilage and hazards of lubrication, is illustrated in a new brochure.

116. Bulletin on horizontal non-ferrous extrusion presses

New A new bulletin describes horizontal extrusion presses designed for aluminum, brass and other non-ferrous metals. The com-

pletely self-contained models shown in the bulletin have many new features that speed production and improve performance standards to "previously unequalled levels."

117. New point-of-purchase decal "ADvisor" full-color book

New Just off the presses—and free for the asking—is a completely new full-color "ADvisor" book, which is said to be the biggest,



most complete guide to the field of point-of-purchase decal signs.

118. Buyer's guide of electric testing instruments

New A buyer's guide on electric testing instruments provides data on such instruments as hook-on volt-ammeters, hook-on wattmeters, hook-on power-factor meters, portable recorders, voltmeters and ammeters, phase-sequence indicators, hand pyrometers, surface roughness scales, insulation-resistance meters, and others.

FINISH
360 N. Michigan Ave.
Chicago 1, Illinois

Please forward to me at once information on the new supplies and equipment and new industrial literature as enumerated below:

No. _____ No. _____ No. _____ No. _____

No. _____ No. _____ No. _____ No. _____

Name _____ Title _____

Company _____

Company Address _____

City _____ Zone _____ State _____

New Processes for Industry

A "cold" drying process for organic finishes

A PRESS conference was held recently at Armour Research Foundation of Illinois Institute of Technology for the presentation of a pilot plant preview of "Chem-Dry Process," a method for the speedy drying of organic finishes. The development of this new method of chemically hardening protective and decorative coatings of paints, varnishes and inks has been sponsored by The Meyercord Company, Chicago.

The process is based on the reaction of the chemical vapor, sulphur dichloride, on the resins and oils in the coating. Hardening is achieved by a cross-linking of the resins and oils which is basically different than that produced in the usual oxidation or polymerization.

From 2 to 20 seconds in this vapor produces an initial set to the coating. The hardening action is then completed without contact with the vapor.

Since the action is different chemically, the resulting film is said to be different from that obtained by the usual drying methods. Although a number of commercial coatings primarily designed for fast drying give

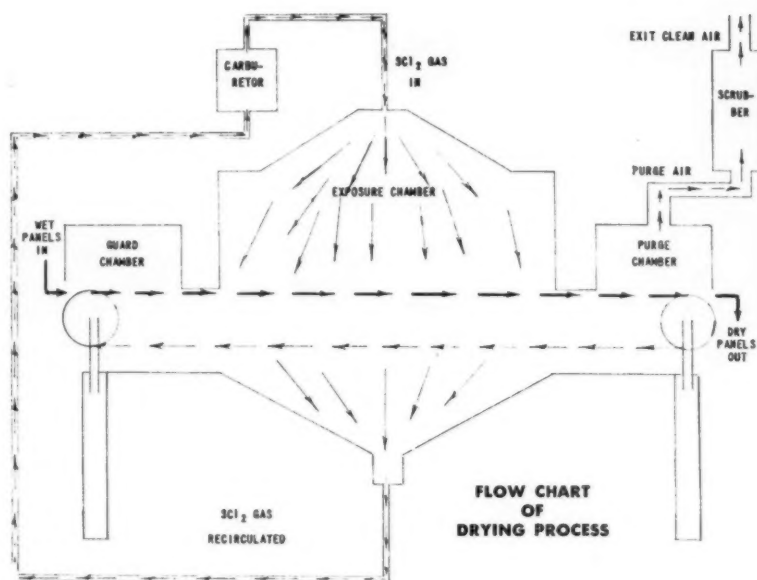
good results with the process, the best formulations are those developed to take full advantage of the Chem-Dry Process, according to its sponsors.

It was pointed out at the demonstration that smoking near the drying equipment presents no fire hazard, as the operation is a "cold" one

and there is no fast evaporation of solvents.

It was demonstrated that steel articles may be dried, packed and allowed to "finish dry" in the package. Steel, however, requires corrosion precautions, due to the corrosive reaction of steel when subjected to sulphur dichloride fumes. It was stated that aluminum does not require any special precautions.

The new process, as developed at Armour Research Foundation through the sponsorship of The Meyercord Company, is a patented one, and is to be handled through a licensing agent.



New water-reducible enamel "refuses to burn"

A new water-reducible industrial enamel that "refuses to burn" at normal operating temperatures was announced by the general industrial division of The Sherwin-Williams Co.

Designed for application on metals, the finish is an emulsion type enamel in which water is employed both as an ingredient and a reducing agent, according to Donald S. Gaarder, assistant general manager of the division.

"The new product culminates more than two years of research," he said.

"It represents the first successful adaptation, to our knowledge, of the water emulsion process in the field of industrial coatings."

Application uses for the coating are "about as broad as industry itself," Gaarder said. Its qualities, he added, meet the requirements of many of the metal-working industries. . . . "In performance it compares with any of the existing finishes for industrial metal products."

Industrially, the safety factor is of primary importance during the

application process," Gaarder continued. "During application, the new finish eliminates industrial fire hazards upon the use of coatings in which organic solvents, such as mineral spirits or naphtha, are the reducing agent."

At the present time the finish is produced only in black, but Gaarder said it can be made in a range of colors. Consumer demands will determine the colors in which it ultimately will be offered.

Qualities cited for the new emulsion enamel include these:

It is non-inflammable at normal room or operating temperature, even if exposed to flame.



RECOMMENDED FOR
USES LIKE THESE



Women operators and others who favor a lightweight gun.



Touch-up work on production-line products.



Glazing of china, ceramic products, etc. Stainless steel nozzle and needle valve recommended here.

NEW spray gun weighs only 15 ozs.

BINKS MODEL 26 IDEAL FOR LIGHT PRODUCTION SPRAYING —AND FOR WOMEN OPERATORS

Binks Model 26 Spray Gun is designed for applications where the gun must produce quality organic or ceramic finishes, yet be exceedingly light in weight. It is ideal for stencilling, blending, touching up products coming off assembly lines and where women operators are doing light production spraying.

This featherweight gun increases efficiency by reducing operator fatigue. It saves money by supplying quality features normally found only in more

costly guns. For example, it has a brass and steel fluid passage to protect the gun body from corrosion and wear caused by certain paints and fluids.

Model 26 can be used to spray lacquers, synthetic enamels, frits, paints and other finishes and coatings of light or medium viscosity. Send coupon TODAY for details, including prices.



Binks

EVERYTHING FOR
CERAMIC FINISHING

Send for Bulletin 26!

This bulletin tells how the featherweight Model 26 Spray Gun saves you time and money. Facts backing each claim thoroughly illustrated. And here you'll find complete specifications with prices included. See your Binks industrial distributor for a copy or send in coupon.

MAIL COUPON today for Bulletin 26

Binks Manufacturing Company
3122-40 Carroll Ave., Chicago 12, Ill.

Gentlemen: Please rush my FREE copy of your Bulletin 26 describing your new featherweight Model 26 Spray Painting Gun

NAME _____

COMPANY _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

REPRESENTATIVES IN PRINCIPAL U. S. & CANADIAN CITIES • SEE YOUR CLASSIFIED DIRECTORY

It is formulated either for dip or spray application. Its hardness, impact resistance, adhesion properties and resistance to oil film are excellent.

It provides an attractive, high gloss finish. Industrial units already coated with the enamel can be machined or fabricated without damage to the finish or to cutting tools.

The use of water as the reducing agent results in substantial economy compared to conventional finishes to which organic solvents are added.

"The consumer need only add water to the new industrial enamel to achieve the desired viscosity for application," Gaarder said. "One user is now employing the dip method and from reports we have received it is entirely satisfactory. It can also be applied with conventional spray equipment."

After application, the enamel is air-dried for 20 minutes, then baked for approximately 18 minutes at about 300° F.



Neither the material nor the vapors ignite when a lighted taper is held in contact with the surface of the enamel at normal room or operating temperature.

New organic-inorganic union creates heat-resistant, non-yellowing enamel

Using a new method of harnessing inorganic to organic materials, the paint industry has formulated a heat-resistant, non-yellowing enamel in the medium cost bracket for coating household appliances and other equipment exposed to sustained, moderately high temperatures.

Chemists for The Sherwin-Williams Co. developed the new finish after four years of research, according to Donald S. Gaarder.

Photo shows contrast in heat resistance of ordinary heat-resistant enamels and the new "Hi-Heat" enamel. One on left was subjected to 375° F. for 16 hrs., while panel on right finished with the new enamel was exposed to 450° F. for 16 hrs.



"The new coating is a modification of the silicone class of materials," Gaarder said. "Laboratory and customer tests have proved that the finish retains the desirable heat-resistant properties of inorganics, together with the versatility and economy of an organic finish."

Currently the finish is offered in white only, but Gaarder reported his company is prepared to produce the material in a range of colors if manufacturers want it in different shades.

The protective coatings industry has utilized the inorganics for some time in finishes designed to withstand extreme temperatures, but this type of material involves comparatively high production costs. The newly developed enamel, Gaarder pointed out, is offered at a price approximately one-half that of present silicone finishes.

The new finish, labeled "KEM-CLAD Hi-Heat Enamel," is recommended for use on phosphatized and clean steel. Its adhesion qualities are described as excellent. Other tests to which the enamel has been successfully subjected include salt spray, hot grease, humidity, chemicals and household cleansers.

The material is formulated for

spray application. The material is reduced 20 per cent with xylol or toluol for spray application. The baking period is 30 minutes at 400° F.

Gas plating . . .

→ from Page 48

very definite importance to many. Films 0.001" thick are deposited in a few seconds. Platings many thousandths of an inch in thickness can be deposited at a proportionate time rate. Filtering and stream pollution problems are not involved where the gas plating process is employed. Gases used may either be vented to the atmosphere or burned. Raw materials required are not many, and are highly concentrated. In some cases they are crystalline products. In other instances, liquids handled in cylinders are used.

Films of metal systems, such as alloy combinations, can be deposited, and the same plating apparatus can be used for depositing different kinds of metals. It is only necessary to use different raw materials, and to adjust the apparatus for the work being

Note

Equipment for gas plating is not universally applicable, though its application is broad. Therefore, the company which specializes in provision of gas plating equipment offers consultation, for the purpose of determining whether work to be done at a given place and plant is feasible and practical by the gas plating method.

done. The process is based on the fact that when the object or material to be plated is placed in a suitably controlled atmosphere, and heated under properly governed conditions, metal deposition occurs. The volatility and decomposition characteristics of metallic compounds such as carbonyls, nitrosyls, hydrides, salt and metal organics are employed. Plating results are in many ways similar to those obtained by electroplating.

Aspects of the process

If material being plated allows it, a clean metal surface for plating may

to Page 89 →



phase 4:

Foote's new lithium chemical plant

PLAN AHEAD

The end-of construction and the beginning of full production are near at hand. Quantities of lithium hydroxide are now being shipped from Foote's new lithium chemical plant at Sunbright, Va.

With the realization that Sunbright is approaching full production, you can now plan ahead in terms of Foote lithium.

phase 3—Pilot plant operations of an exclusive lithium process developed by Foote.

phase 2—Kings Mountain, N. C.
—Mining largest known deposits of spodumene.

phase 1—Continuing Foote research...finding new and improved uses for lithium chemicals.

"Industry Looks at Lithium"

... a new, informative brochure on the properties and industrial uses of lithium and its compounds. Write for your copy today.

FOOTE MINERAL COMPANY

412 Eighteen W. Chelton Building; Philadelphia 44, Pa.

RESEARCH LABORATORIES: Berwyn, Pa.

PLANTS: Exton, Pa.; Kings Mountain, N.C.; Sunbright, Va.



More Positive Pro

New Process D-Enameling Corporation
Highland and New Haven Avenues • P. O. Box 168, Aurora, Illinois
Phone AU rora 2-8134

September 1, 1953

SEP 21953

Mr. Dana Chase, Publisher
Finish Magazine
360 N. Michigan Ave.
Chicago, Illinois

Dear Mr. Chase:

Having just completed our first year of advertising in Finish, we are very pleased to say that we can attribute increased business to this advertising, since we have no field sales force and your publication was the only one used.

As you well know, the reason we selected Finish in the first place was because we knew it covered the market among manufacturers of appliances and other fabricated metal products who can benefit from our D-Enameling service. As a result of this fine showing, we have authorized our advertising agency to renew our contract for a full page of advertising every month for another year.

Cordially,

Arthur M. Lander
Arthur M. Lander
President

AML/ac

THE MAGAZINE OF
Appliance AND
Metal Products MANUFACTURING

FROM RAW METAL TO FINISHED PRODUCT

Dana Chase

Proof OF ADVERTISING RESULTS

from



Typical Advertisement



The accompanying letter tells the story of advertising results based on the first year of advertising in *finish*. Arthur M. Lander, president, New Process D-Enameling Corporation, says, "As a result of this fine showing, we have authorized our advertising agency to renew our contract for a full page of advertising every month for another year."

Here is another case where advertising results can definitely be measured . . . because . . . New Process D-Enameling Corporation travels no field men, all contacts being made

by the principals from the factory . . . and . . . *finish* is the only advertising medium used for promoting their service.

Here is **MORE POSITIVE PROOF** that if you have the right material, equipment, component or service for the home appliance and metal products manufacturing field . . . and present it properly in *finish* . . . the men who engineer and build the metal products plus those who purchase for and manage the producing plants will respond.

the only industrial trade publication completely blanketing the home appliance and allied metal products industries

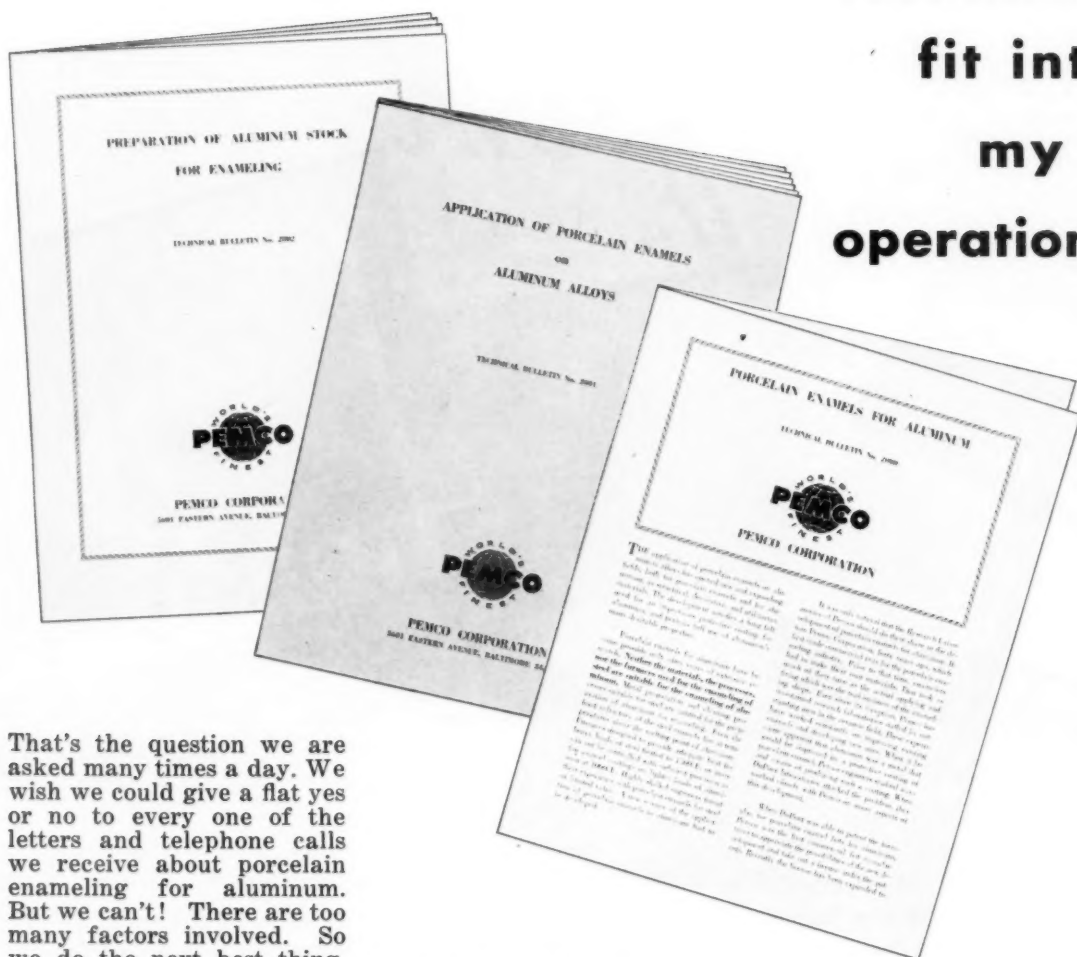


TELEPHONES Central 6-1229 and 6-1263

PUBLICATIONS

360 N. MICHIGAN AVENUE • CHICAGO 1 • ILLINOIS

"Will porcelain enameling of ALUMINUM fit into my operations?"



That's the question we are asked many times a day. We wish we could give a flat yes or no to every one of the letters and telephone calls we receive about porcelain enameling for aluminum. But we can't! There are too many factors involved. So we do the next best thing. We send along our Technical Bulletin No. 2000. This pamphlet covers the situation as briefly and succinctly as we know how to write it.

Maybe you'll find your answer in paragraph 2 . . . or paragraph 19 . . . or maybe not at all. Perhaps Bulletin No. 2000 will simply whet your appetite for Bulletin 2001, which is a detailed description of the way in which porcelain enamel must be applied to aluminum. If you want still more, there is Bulletin No. 2002 on "Preparation of Aluminum Stock for Enameling." All are free.

Why don't you ask us for your copy of our Technical Bulletin No. 2000? We'll be happy to send it to you. And if you want to look into the matter any farther, we will be at your service.



5601 Eastern Avenue, Baltimore 24, Md.

"The World's Finest" PORCELAIN ENAMEL FRITS • GLAZE FRITS • COLORS

Porcelain enamel men discuss new markets at annual meeting



PEI Executive Committee — Front row: W. N. Noble, Ferro; Herbert Turk, Pemco; J. J. Boehler, Heintz; W. A. Barrows, Barrows Porcelain; J. E. Bourland, Texlite; and H. V. Penton, California Metal Enameling. Back row: W. R. Mabey, Tappan Stove; A. S. Ault, Chicago Vitreous; A. M. Lander, New Process D-Enameling. William Brinker, PEI; William Lowry, Vitreous Steel; H. A. Ringelberg, Challenge Stamping; T. G. Harris, Porcelain Steel Corp.; Ray Dadisman, Armco Steel; H. M. Brenner, Drakenfeld; P. B. McBride, Porcelain Metals; W. F. Wenning, Ceramic Color; Edward Mackasek, PEI; J. A. Holcomb, Wolverine Porcelain; R. H. Coin, Ingram-Richardson; J. H. E. McMillan, Ingram-Richardson; and John Oliver, PEI.

THE Greenbrier, at White Sulphur Springs, W. Va., was the scene for the 22nd annual meeting of the Porcelain Enamel Institute, on September 30, October 1 and 2.

The Institute is the national trade association for the porcelain enameling industry and has in its membership porcelain enameling plants and suppliers of porcelain enameling materials and equipment.

Institute president W. A. Barrows, of Barrows Porcelain Enamel Co.,

presided at the Wednesday morning session, keynoting the meeting's theme, "Industry Progress through Cooperative Action." Displays graphically illustrated many activities that had taken place in the past year in the various divisions. The annual corporate meeting took place, followed by a meeting of the new board of trustees.

At an important Architectural Division meeting which took place Wednesday afternoon, many vital factors

of the industry were discussed. J. E. Bourland, of Texlite, Inc., division chairman, led this session.

Markets, test equipment and Safe Transit

A. B. Friedmann, of Chicago Vitreous Enamel Product Co., presided over the Thursday morning business-packed session. Activities of the National Safe Transit Committee, a part of the Institute's organization, were given attention by the showing of

ATTENTION!



You Enamelers Who Want More Profitable Operation

What do you need for more profitable operation? Greater uniformity in the frits, powdered clays, and oxides you buy? Increased production? Better coverage? Better color match? Fewer rejects? Lowered costs all around?

Just name what you need for boosting profits of operation and we'll fill that need. Promptly!

We speak with the assurance that comes from 62 years of specialized experience. The forward-looking house of Hommel is one of the oldest and most honored in the industry.

Our organization rubs elbows regularly with 5,000 satisfied users of our products.

Request a Hommel Service Engineer. That will be the beginning of more profitable operation for you.

Sales representatives throughout the world

THE O. HOMMEL CO. PITTSBURGH 30, PA.

POTTERY • STEEL AND CAST IRON FRIT
CERAMIC COLORS • CERAMICALS • SUPPLIES

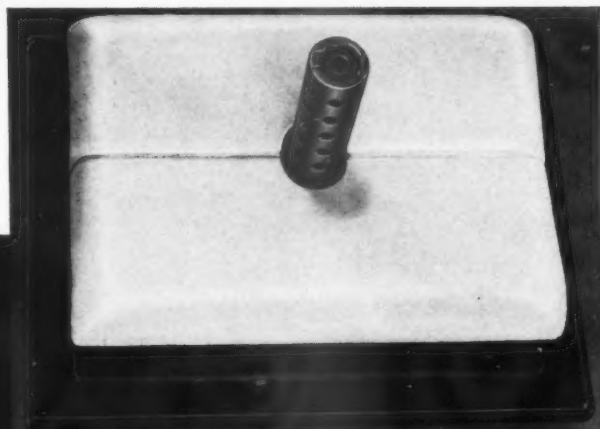
Our Technical Staff and Samples are available without obligation. Let us help with your problems.

World's Most Complete Ceramic Supplier



- No Rejects from Grinding on Metal—
- No Poky, Old-Fashioned Door-Removing—
- 100% Pure, Fast, Economical Batches!

Yes- M'DANEL



MILL HEAD ASSEMBLIES

Pay and Pay in Every Way

THERE'S no substitute for the real McCoy — or the real McDanel. Some 25 years ago the McDanel founders figured out a unique and original way of keeping the iron door and frame of a mill from getting at — and spoiling — a mix.

McDANEL COVERED THE DOOR AND FRAME WITH PORCELAIN . . . high density blocks now available . . . and then McDanel made it unnecessary to remove the door at every discharge! McDANEL PUT A HOLE IN THE MIDDLE OF THE DOOR.

That's how purer batches are discharged faster. That's why so many ceramic and paint plants have equipped all their mills with McDANEL MILL HEAD ASSEMBLIES. That's what YOU can do to protect, improve, increase your mill production.

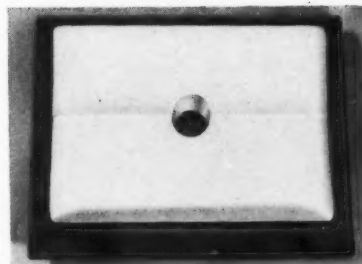
Other McDANEL Products

- MILL LINING BRICK
- TANK AND DRYER LININGS
- SPECIAL MILL LINING SHAPES
- PORCELAIN GRINDING JARS AND MILLS
- METAL COVERED GRINDING JARS AND MILLS
- DOOR LINING BLOCKS

Write today for our new catalog — just off the press — containing complete data on McDanel Porcelain Products.



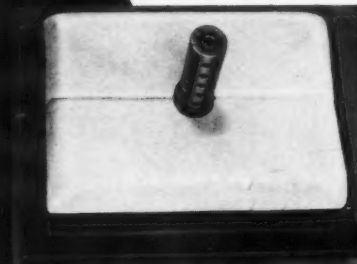
McDANEL REFRACTORY PORCELAIN CO.
BEAVER FALLS, PENNA.



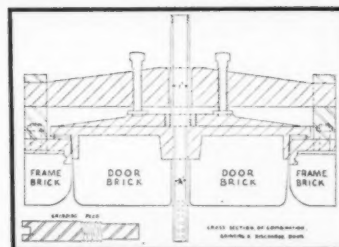
A. INTERIOR VIEW



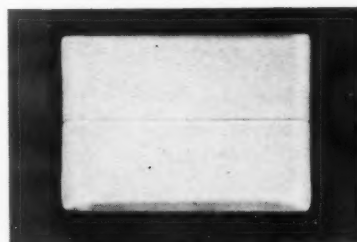
B. TOP VIEW



C. DISCHARGE PLUG SUBSTITUTED FOR GRINDING PLUG



CROSS SECTIONAL VIEW



SOLID DOOR FOR DRY GRINDING

the film, "Safe Transit—An Accomplishment by Cooperation".

W. N. Noble, of Ferro Corporation, presented a paper, "Test Methods—Vital Tools for Industry Growth". Noble explained how a research fellowship had been established at the Enameled Metal Section of the National Bureau of Standards in 1937. He stated that, "As for the test work itself, one eminent industry leader estimates that the cooperative test development program which has been carried on since 1937 can be conservatively estimated to be worth at least one half million dollars to the industry". Noble then discussed three of the important pieces of test equipment, which are currently available through the Institute: the PEI adherence meter, the PEI torsion tester, and the PEI abrasion tester.

"Markets for Porcelain Enamel—A Study of Chalkboards, Tub Enclosures, and Roofing" was the next main topic of discussion. A display of these products was on hand for the presentation made by C. P. Lohman, of Pemco Corporation, chairman of the New Uses Committee. Lohman worked very closely with Edward Mackasek, managing director of the Porcelain Enamel Institute, in connection with this presentation. The thorough investigation of these three varied products included full data on the market possibilities, production requirements and recommended promotion plans.

D. H. Malcom, of Armco Steel Corporation, chairman of the Institute's Market Development Committee, made an interesting talk, "Look-



ing Ahead To Greater Markets". This included a complete review of the publicity, advertising, sales promotion and other market development materials and activities for the past year. Malcom also covered the proposed program for the coming year.

The traditional annual banquet was held Thursday evening.

Friday morning was filled with meetings of many of the Institute's Divisions, including the General Enameling Division, the Sign Division, the Steel Plumbing Fixtures Division, the newly-formed Color Manufacturers Division, and the Frit Division.

Officers for 1954

During its annual corporate meeting the Institute elected officers for the coming year. W. A. Barrows was again named president.

Vice presidents are: W. N. Noble, Ferro Corp., Cleveland; J. E. Bourland, Texlite, Inc., Dallas; E. O.

Brady, Briggs Manufacturing Co., Detroit; R. C. Myers, U. S. Steel Corp., Pittsburgh; H. McE. Patton, Ingram-Richardson Mfg. Co., Beaver Falls, Pa.; and R. N. Smith, Temco, Inc., Nashville.

P. B. McBride, Porcelain Metals Corp. of Louisville, was re-elected treasurer. Edward Mackasek and John C. Oliver, both of Washington, D.C. were reelected managing director and secretary, respectively. R. A. Dadisman, Armco Steel Corp., Middletown, Ohio is immediate past president.

Board of trustees

W. A. Barrows, Barrows Porcelain Enamel Co., Cincinnati; W. N. Noble, Ferro Corp., Cleveland; J. E. Bourland, Texlite, Inc., Dallas; E. O. Brady, Briggs Manufacturing Co., Detroit; R. C. Myers, U. S. Steel Corp., Pittsburgh; H. McE. Patton, Ingram-Richardson Mfg. Co., Beaver Falls, Pa.

H. V. Penton, California Metal Enameling Co., Los Angeles; H. A. Ringelberg, Challenge Stamping & Porcelain Co., Grand Haven, Mich.; M. J. Salton, Seaporcel Metals, Inc., Long Island City, N.Y.; H. R. Spencer, The Erie Enameling Co., Erie, Pa.; Hoyt P. Steele, Benjamin Electric Mfg. Co., Des Plaines, Ill.; R. A. Weaver, Jr., The Bettinger Corp., Waltham, Mass.

F. H. Bechill, Kaiser Metal Products, Inc., Bristol, Pa.; J. J. Boehler, Heintz Mfg. Co., Philadelphia; R. S. Ingersoll, Ingersoll Products Div., Borg-Warner Corp., Chicago; J. W.



B. Dyer (right), of Vitreous Steel Products, presents to Don Malcom, of Armco Steel, a small gift as a token of appreciation for his services to the Institute.



View of speaker's table at the traditional banquet of the Porcelain Enamel Institute.

Lelivelt, Nash-Kelvinator Corp., Grand Rapids, Mich.; G. R. Long, Frigidaire Division, General Motors, Dayton, Ohio.

W. R. Mabey, Tappan Stove Co., Mansfield, Ohio; H. M. Strong, Murray Corp. of America, Scranton, Pa.; Y. C. Smith, AllianceWare, Inc., Alliance, Ohio; A. S. Ault, Chicago Vitreous Enamel Product Co., Cicero, Ill.; H. M. Brenner, B. F. Drakenfeld & Co., Inc., Washington, Pa.; E. M. Hommel, The O. Hommel Co., Pittsburgh.

R. N. Smith, Temco, Inc., Nashville; R. H. Coin, Ingram-Richardson, Inc., Frankfort, Ind.; R. J. DeVoe, Davidson Enamel Products, Inc., Lima, Ohio; T. G. Harris, Porcelain Steel Corp., Connersville, Ind.; W. H. Lowry, Vitreous Steel Products Co., Cleveland; J. H. E. McMillan, Ingram-Richardson Mfg. Co., Beaver Falls, Pa.

John V. Long, Solar Aircraft Co., San Diego; Burton Longwell, Republic Steel Corp., Cleveland; Herbert

Turk, Pemco Corp., Baltimore; W. F. Wenning, Ceramic Color & Chemical Mfg. Co., New Brighton, Pa.; B. J. Willner, Inland Steel Co., Chicago; A. M. Lander, New Process D-Enameling Corp., Aurora, Ill.

P. B. McBride, Porcelain Metals Corp. of Louisville, Louisville; Edward Mackasek, Washington, D.C.; John C. Oliver, Washington, D.C. and R. A. Dadisman, Armco Steel Corp., Middletown, Ohio.

Three new porcelain enamel markets

report on chalkboards, bathtub enclosures and roofing

by C. P. Lehman • SALES MANAGER, PEMCO CORPORATION; CHAIRMAN, PEI NEW USES COMMITTEE

INSTEAD of making a rather superficial study of a large number of new markets for porcelain enamel, this year the New Uses Committee concentrated on only three — the markets for chalkboards, bathtub enclosures, and roofing. These three new markets hold great promise for profit to both small and large enamellers. To aid us in our work, we solicited the services of the Commercial Research Committee and the Market Development Committee of the Institute. They are responsible for the story.

A complete and detailed report on each of these three market studies will be published later. Here we can only hit the high spots. We hope the birdseye picture we are going to present will give some idea, at least, of the splendid opportunities for both growth and profit these three markets hold.

A look at the chalkboard market

Twenty-three per cent of the country's population goes to school. That's about 27 million students in both

grade schools and colleges. The number is increasing as the population of the country increases.

According to the U. S. Office of Education, school construction is not keeping pace with classroom needs—even though a record 50 thousand new classrooms were built this year. A total of 325,000 new classrooms are needed to cope with increased enrollment in schools, and an additional 275,000 classrooms must be replaced because of obsolescence.

All this adds up to 30 million square feet of chalkboards—or approximately 80 million dollars for materials, exclusive of erection costs for new chalkboards during the next ten years. With nearly one million schoolrooms in existence in the country, the replacement market for chalkboards offers additional splendid opportunities. Combined, this new and replacement market adds up to a conservative potential of between 6 and 12 million square feet of chalkboards a year.

Where is this market located? Well, 40% is concentrated in New

W. A. Barrow, PEI president, John Oliver, secretary, and Edward Mackasek, managing director, are shown in front of an exhibition of work being accomplished through PEI Committees.



Jersey, New York, Pennsylvania, Ohio, Indiana, Illinois, Michigan and Wisconsin. The South accounts for another 31%, while the balance of 13% is West of the Rocky Mountains.

When it comes to competitive materials, we're lucky. There are only four — composition board, slate, glass and plastics. In the past ten or twelve years, composition board has captured about 50% of the national market. In the same length of time, slate dropped from a high of 80% to 25%. Glass and plastics — both of which are on the decline — share the remainder of business between them. Based on what school experts have told us, we believe that porcelain enamel can capture up to 40%

of the chalkboard market by 1958 — provided rigid quality specifications are established and maintained, plus an aggressive sales promotion and advertising program.

Plastic chalkboards lack dimensional stability and are difficult to erect. Slate is invisible at certain angles and gets a high gloss from constant erasing. Glass, under heavy internal stress, is subject to implosion. Composition board warps, and the surface is not permanent or sanitary. It begins to fade at the end of three years and must usually be replaced in six years. As compared with all of these, porcelain enamel is superior in every respect—as far as we can learn.

Color manufacturers form new division of Porcelain Enamel Institute

Manufacturers supplying the porcelain enamel industry with color oxides met in Cleveland recently, and formally organized as a division of the Porcelain Enamel Institute. It will officially be known as the Color Manufacturers Division. W. F. Wenning of Ceramic Color & Chemical Mfg. Co., New Brighton, Pa., was elected chairman.

A considerable increase in the demand for color is anticipated, it was stated, as a result of the noticeable trend now in progress toward the increasing use of color in the appliance field, in widening architectural applications, and in deco-

orative arts. The new group feels that closer cooperation between the color oxide producers, the porcelain enamellers, and those they serve is essential in evaluating the many factors related to color use and in the solution of the technical, educational and promotional problems they present.

Companies represented at this meeting were Ceramic Color & Chemical Mfg. Co., Chicago Vitreous Enamel Product Co., B. F. Drakenfeld and Co., Inc., Ferro Corporation, The Harshaw Chemical Co., Pemco Corporation, The Shepherd Chemical Co., and Vitro Manufacturing Co.

Finishfoto taken at second meeting of color oxide group during PEI annual meeting. Clockwise: W. F. Wenning, Ceramic Color; Edw. MacKasek, PEI managing director; A. S. Ault and M. D. O'Leary, Chicago Vitreous; J. F. Matejczyk and J. F. McCrory, Hommel; H. M. Brenner, Drakenfeld; W. R. Greer, Pemco; Glen Hutt and Wm. Noble, Ferro.



The market for bathtub enclosures

Last year 670,000 bathtub enclosures were lined with some type of facing material. That represents about 30 million square feet of wall covering. *Somebody*, therefore, sold some kind of wall covering to the tune of 30 million square feet for bathtub enclosures last year. Thirty million square feet a year. Nice. And what makes it even nicer is that it's an easy, simple and inexpensive market to reach.

Our information shows 39% of the bathtub enclosure market is in the Northeastern part of the country. 23% is in the North-Central section, 18% in the Northwest, 11% in the Southwest, and 9% in the Southeast.

Whereas in the chalkboard market we would have four out-industry competitors, in the market for bathtub enclosures we would have six — ceramic tile, plastic tile, composition board, aluminum tile, steel tile and linoleum. Of these, ceramic tile controls 32% of the market today. Plastic tile holds 28%, while composition board runs third with 20%. The small remaining balance is divided about equally among aluminum and steel tile and linoleum. Our major competitors, therefore, would be ceramic and plastic tiles.

Porcelain enameled roofing

In total, this market amounts to 12 billion square feet a year. Half goes for residential construction, about 1/3 for non-residential, and the balance for farm buildings.

Asphalt controls the largest share of the roofing market in all categories. Wood shingles, galvanized steel, and aluminum account for most of the rest. Some 35% of house roofs, 50% of barn roofs, and 37% of the roofs on all other kinds of buildings have been in service for 15 years or longer. This indicates an excellent replacement potential, especially in the farm market. About 1½ billion square feet of roofing material is sold annually to farmers. Fifty-five per cent of this is asphalt roll and shingles. Steel accounts for 20%. A study made several years ago showed

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BRAB Conference Program Page 83

Metal stampers hold annual meeting

Hull elected president of the Pressed Metal Institute at 10th anniversary meeting

THE stamping industry's national association, the Pressed Metal Institute, held its 10th anniversary meeting at the Bellevue-Stratford Hotel, Philadelphia, October 7-10. In attendance were representatives from stamping companies from coast to coast and Canada.

Samuel P. Hull, vice president of Worcester Stamped Metal Co., of Worcester, Mass., was elected president of the Institute.

Elected vice president was James M. Leake, president of The Leake Stamping Co., Monroe, Michigan. Hunter Morrison, Jr., vice president of Morrison Products, Inc., Cleveland, Ohio, was elected secretary-treasurer for his third consecutive term.

Directors of the Institute elected during the convention include:

H. E. Berry, Thomas Smith Co., Worcester, Mass.; R. W. Blackman, Blackman Stamping & Mfg. Co., Los Angeles; L. E. Dail, Dail Steel Products Co., Lansing, Mich.; W. R. Fischer, Peters Stamping Co., Perrysburg, Ohio; K. A. Honroth, Freeway Washer & Stamping Co., Cleveland; H. P. Hopp, H. K. Metal Craft Mfg. Co., New York City.

Ray Howland, Eastern Tool & Stamping Co., Saugus, Mass.; E. A. Irwin, E. W. Bliss Co., Canton, Ohio; Bruce Krasberg, R. Krasberg & Sons Mfg. Co., Chicago, Ill.; W. K. Lomason, Douglas & Lomason Co., Detroit; Sam Morrison, Morrison Steel Products, Inc., Buffalo; E. T. Nolan, Advance Stamping Co., Detroit.

W. J. Primrose, Jr., The Dickey-Grabler Co., Cleveland; C. Glenwood Rose, Judson & Rose, Inc., Philadelphia; George N. Schramm, United States Steel Corp., Pittsburgh; C. E. Stryker, Maysteel Products, Inc., Milwaukee; Norman R. Thal, In-shield Die & Stamping Co., Toledo; and Melvin Verson, Verson Allsteel Press Co., Chicago.

Frank Humberger, president of Technical Metal Processing, Inc., of Cleveland, was elected chairman of PMI's Associate Members, and John F. Lott, vice president of Federated

Steel Corporation, Pittsburgh, was elected vice chairman.

The first day of the convention comprised meetings of the working committees of PMI including: Tech-



S. P. HULL, PMI PRESIDENT

nical Research and Standards, Public Relations, Education and National Membership.

Wage incentives discussed

Highlights of the convention included a panel discussion on "Wage Incentives" moderated by Orrin B. Wernitz, PMI managing director, and featuring C. W. Cederberg, treasurer of Larson Tool & Stamping Company, Attleboro, Mass.; J. W. Gulliksen, general superintendent of Worcester Pressed Steel Co., Worcester, Mass.; W. K. Lomason, president of Douglas & Lomason Company, Detroit; and P. C. Wood, assistant to the vice president in charge of manufacturing of The Acklin Stamping Company, Toledo.

Leslie F. Randall, personnel manager of The Budd Company, of Phila-

delphia, spoke on Friday morning on "Recruitment and Maintenance of Employees".

Luncheon speakers included Father D. J. Comey on "Philosophizing Labor Relations". He also gave the members of PMI an insight on the workings of a President's Arbitration Board, having recently been appointed by President Eisenhower to the three-man board to settle the east coast dock workers' strike.

PMI merit awards

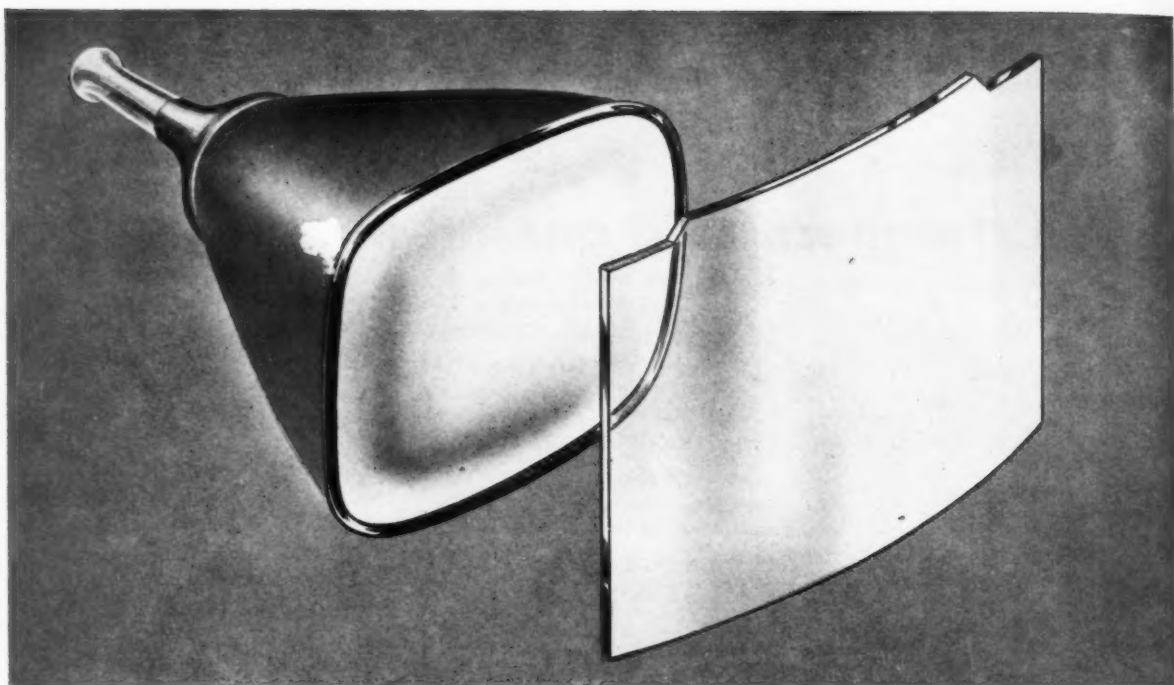
Certificates of Merit, which are PMI's highest honor, were presented during the banquet to retiring president, Wallace F. Ardussi, president of Variety Machine & Stamping Company, Cleveland, for his work in promoting and advancing the Institute; and C. O. Rainey, secretary-treasurer of Morrison Steel Products, Inc., Buffalo, for his services in the preparation, presentation and distribution of the industry's first "Cost Control Manual" and for his services as Chairman of PMI's Committee on Statistics.

Breckenridge heads PMI engineering department

At the meeting, the Pressed Metal Institute announced the appointment of R. W. Breckenridge as technical director to head PMI's new technical and engineering department.

PMI begun in 1943

The first trade association for the metal stamping industry was formed during World War I in 1918; and the successor Pressed Metal Institute was incorporated as a non-profit organization in 1943; and now includes in its international membership companies from coast-to-coast and also England and Canada.



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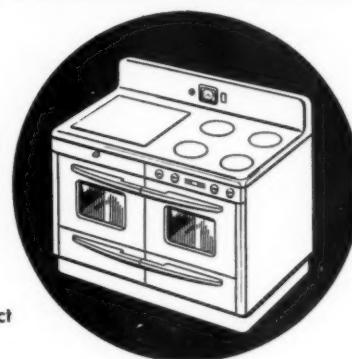
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Photo shows members of committee which handled the AIEE symposium. Left to right — first row: J. A. Walley, W. W. Warner, J. H. Capps (general chairman), M. J. Carroccio (publicity chairman). Second row: R. L. Balke, D. D. Hershberger, J. L. Oldenkamp, R. L. Hupp, F. T. Carlson, M. L. Miller (chairman—Ft. Wayne section AIEE), and Sol London.

Conference on the application of motors to air moving equipment

A CONFERENCE on "The Application of Motors to Air Moving Equipment" and a concurrent Symposium on Induction Motors" drew a total of 355 appliances manufacturers and suppliers to the Van Orman Hotel, Fort Wayne, Indiana, October 6-8.

The meeting was sponsored jointly by the Rotating Machinery Committee of the American Institute of Electrical Engineers and the AIEE Fort Wayne Section. The conference was opened with a welcoming address by M. L. Miller, of General Electric Co., and chairman of the Fort Wayne Section.

Fan motor characteristics and standards

The first speaker was T. E. M. Carville, of Westinghouse Electric Corp., who discussed "Fan Motor Characteristics and Standards." His subject was centered on NEMA standards "since they more directly affect the motors being supplied and are in agreement with AIEE and other similar standards."

The establishment of standards in any industry, stated Carville, is of vital value to both the ultimate user or consumer and the manufacturer. Standards aid materially in a common understanding between motor manufacturers and the producers of fans and blowers regarding the performance, capabilities and dimensions. They allow an interchangeability of motors as produced by various manufacturers.

Automatic temperature control for air handling systems

G. V. Steffens, of Minneapolis-Honeywell Regulator Co, followed with "Automatic Temperature Control of Heating, Ventilating and Air Conditioning Air Handling Systems."

Steffens described how to make a forced air system capable of providing continuous fan operation to minimize stratification, modulating control to minimize temperature fluctuations, and ventilation control as required by space conditions, as well as the inserting of a cooling coil in the fan system ahead of the heat-

ing coil to provide for year-around temperature control.

Room air conditioners

W. P. King, of Servel, Inc., addressed the group on "Room Air Conditioner Application and Heat Load Factors."

Operation of the room air conditioner is not as simple as plugging in a radio, stated King, who pointed out that the usual watts consumed is in the range of 900 for a 1/2-ton unit, 1200 to 1250 for a 3/4-ton unit, and 1500 to 1600 for a one-ton unit. The 1/2 and 3/4-ton units are furnished for operation starting with 115 volts. One-ton units are furnished for 208 or 230 volt single-phase operation. An exception to this, said King, is one manufacturer's unit that uses two 1/2-ton compressors operated on 115 volts with increment starting of the units. In many cases, a separate circuit must be wired direct to the unit using 12 gauge AWG wire because existing circuits are overloaded and in some cases the conductor itself is too small.





Luncheon session during "Conference on the Application of Motors to Air Moving Equipment."

Regarding the service of present-day room air conditioners, King stated that the units, with only slight attention, should provide many years of trouble-free operation.

Evaporative coolers

The subject of evaporative coolers was discussed by Richard J. Petersen, chief engineer, Utility Appliance Corp.

A good evaporative cooler should be designed for an evaporative efficiency of approximately 80%, he stated. "This means that the drop in temperature through the cooler should be 80% of the difference between the dry and wet bulb temperature."

Petersen pointed out that for best results, it is necessary to have considerable amount of air movement over the occupants, and for this reason a fairly high rate of air change is recommended. In arid regions, an air change of once every three minutes is satisfactory, while in more humid areas an air change every minute may be required.

Requirements of air conditioning fan motors

M. D. Irwin, Carrier Corp., pointed to the following elements as of prime importance in the application of motors to air moving duty: quietness of operation; permanent lubrication; universality in mounting arrangements and accessories; speed regulation; atmospheric protection; dependability and reliability, and low cost.

An important part of the progress which has been made in air conditioning unit design in the direction of lower operating sound levels, more compact unit arrangement, simplified wiring and control arrangements, lower inrush currents, etc. has been due to the continued interest and co-operation of the electric motor industry, concluded Irwin.

Unit heater fans

A. Currie, of L. J. Wing Mfg. Co., classified unit heater fans in three types: propeller, axial, and centrifugal.

He said the propeller fan is limited to free air, light pressure operations,

or (in unit heater work) low outlet velocities. Centrifugal fans, capable of producing high pressures, are used where long throws are necessary. The axial flow fan is capable of producing pressures and velocities equivalent to that of the centrifugal, but requires less space to do so.

Currie also detailed a new code of sound measurement as sponsored by the Industrial Unit Heater Association.

Overheat protection of motors

A field survey report on "Inherent Overheat Protection of Motors in Air Moving Equipment" was presented by W. L. Hirshberg, Jr., of Spencer Thermostat Division, Metals & Controls Corp.

It was pointed out that survey data indicated that fan and blower motors are among the group involving the highest percentages of winding burn-out and, therefore, proper overheat protection should help to improve this situation. The data also indicated that inherent protectors reduce burnouts among motors coming into repair shops by a factor of 80%, said Hirshberg.

W. H. Wentling, of Lau Blower, presenting an address on "Attic Fans and Window Ventilators."



NEWS

AIRTEMP EXPANSION PROGRAM

Chrysler Corporation's Airtemp Division has announced a \$2 million expansion program to boost output of air conditioners. Additions to the firm's Dayton, Ohio, plant will include a new 93,000 sq. ft. manufacturing building.

SERVEL PURCHASING APPTS.

S. L. Nicholson, vice president in charge of purchasing, Servel, Inc., Evansville, Ind., has announced the appointments of Byron Getman as supervisor of purchasing follow-up, and Louis R. Smith as buyer of fabricated metal parts, washers, chemicals and outside plating.

REPORT 37 MILLION GAS APPLIANCES SOLD SINCE 1948

The Gas Appliance Manufacturers Association reports that the number of gas appliances sold in the United States in the past five years has far exceeded the million-a-year rate of new home construction during the same period.

Rapid expansion of the nation's natural gas pipelines system and development of new automatic features in gas appliance operation were some of the reasons given by James F. Donnelly, GAMA president, as principal reasons for the increase.

Donnelly, who is also vice president of Servel, Inc., stated that since 1948 members of the gas appliance

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industry have shipped "approximately 12,500,000 domestic gas ranges, more than 10,000,000 gas water heaters, and 14,800,000 units of gas house heating equipment, ranging from central heating to direct room heaters."

STUCKEY JOINS CROWN STOVE AS CHIEF PRODUCT ENGINEER

Walter F. Rogers, president of Crown Stove Works, Chicago, has announced the appointment of Warren A. Stuckey as chief product engineer to succeed J. L. Bright who retired after 43 years with the company. He will direct all development, research and engineering of new products as well as current products.

Stuckey has had wide experience in the gas and electric range industry, having been formerly connected with Florence Stove Co., Moore Corp., and Kalamazoo Stove Co.

EKCO PRODUCTS TURNS OUT MILLIONTH SHELL CASE

The Massillon, Ohio, plant of Ekco Products Co. recently turned out its one millionth 90 mm. steel artillery shell case. State, military, and company officials took part in the ceremonies which hailed the steel case as equal to or better than brass in performance and lower in cost.

PALLEY UPS KLINKENSTEIN

William L. Klinkenstein has been elected to the new post of vice presi-

dent in charge of sales, Palley Manufacturing Co., Pittsburgh, manufacturers of steel kitchens and housewares, it was announced by J. Lewis Palley, president. Klinkenstein joined the firm in 1948 as sales promotion manager and was elected to the board of directors in 1951.

FRESH'ND-AIRE EXPANSION ADDS TWO PURCHASING AGENTS

Cory Corporation has announced the appointments of Conrad Bouchard and Leo Grost as purchasing agents for the Fresh'nd-Aire Co. division, Grayslake, Ill. Both men will work with Elmer Smith, chief of procurement.

"The addition of these two executives spotlights the great expansion of Fresh'nd-Aire manufacturing facilities at Grayslake," commented J. W. Alsdorf, Cory president. "Although only several months old, that division's plant plans to double its output of Fresh'nd-Aire all-season room air conditioners, fans, heaters, and electric air circulators in 1954," said Alsdorf.

RUNDELL NAMED OPERATIONS VICE PRES. FOR SERVEL

Theodore W. Rundell has been appointed vice president in charge of operations, Servel, Inc., it was announced by W. Paul Jones, president. Rundell will have over-all responsibility for production and inspection, engineering and research, purchasing, personnel and labor relations, and product planning. He formerly was vice president in charge of engineering.

ADMIRAL HOME ECONOMIST FORSEES ATOMIC POWERED HOME APPLIANCES

The refrigerator of the future may be atomic-powered, and may bear little resemblance to the present-day gleaming white upright kitchen appliance. That's the opinion of Mrs. Vivian Overand, director of home economics for Admiral Corporation.

Mrs. Overand believes the deluxe refrigerators in 1975 may not have a

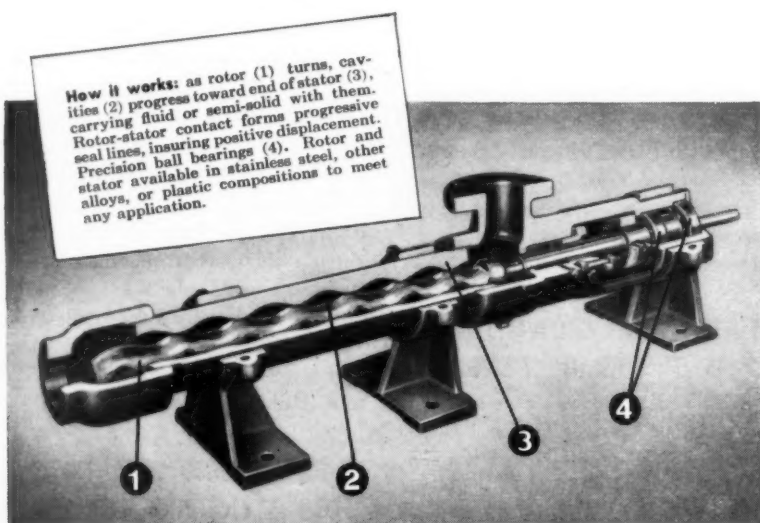
handle on the door, and will open automatically whenever the homemaker activates an electric eye. Thousands of units in a city may be powered by a single atomic pile. She also predicted that there will be a trend to "upside-down" refrigerator-freezers, with more freezer space at the bottom.

"Our engineers," reports Mrs. Overand, "also say that in the refrigerator of the future it may be possible to utilize the heat from the

unit's condensor to warm baby's bottle or even water."

The electric range also has stimulated Mrs. Overand's imagination, and she foresees the featuring of several accessories on each unit.

"A combination built-in pressure cooker and deep fat fryer is a possibility, as well as an automatic toaster. It may also be feasible to mold the circuits in the back of the range and eliminate soldered connections in favor of simple plug-in connections."



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H. L. CLARY TO BRYANT

H. L. Clary, vice president in charge of sales, Norge Division, Borg-Warner Corp., has resigned to accept a position with the Bryant Heater Division, Affiliated Gas Equipment, Inc., Cleveland. He had been with Norge since 1945, and served as vice president since 1950.

ADMIRAL RESEARCH MANAGER TO ARI STATISTICS COMMITTEE

R. L. Anderson, manager of markets and research, Admiral Corporation, has been appointed a member of the Statistics Committee of the Room Air Conditioner Product Section of the Air-Conditioning and Refrigeration Institute, according to an announcement by George S. Jones, Jr., ARI managing director.

PERFECTION CONTRACT SALES APPOINTMENT

Perfection Stove Company, Cleveland, has announced the appointment of H. E. Thomas as manager of the contract sales department. Thomas succeeds H. C. Erhard who was named manager of an eastern sales district.

BINKS FINISHING SCHOOL

Binks Manufacturing Co. has announced that it will conduct a new series of "spray painting schools", in Chicago, starting early in January. The announced dates for three one-week sessions are: January 4-8, February 1-5, March 1-5. Classes will be held at the Binks plant in specially prepared quarters completely equipped for instruction purposes.

DEVILBISS REPORTS ON WEST COAST FINISHING SCHOOL

Paint finishing foremen, who attended The DeVilbiss Company's first spray painting classes on the West Coast during the summer, have a new conception of spray techniques, according to George I. Stoddard, spray finishing instructor at the company's Santa Clara plant and the University of Santa Clara.

Stoddard said that two "bugaboos"

which have been giving trouble to spray operators are improper spraying pressures and incorrect gun handling techniques.

It was indicated that the company expects to conduct the classes annually on the West Coast.

G-E TO DISCONTINUE WRINGER WASHER LINE

Manufacture of wringer washers will be discontinued by General Electric Company by April, 1954. James H. Goss, general manager of the company's home laundry equipment department, said that the decision to discontinue the manufacture of wringer washers was made in order that effort might be concentrated on the production of automatic washers and dryers.

Conventional washers have been produced at the company's Bridgeport, Conn., works since 1935. Goss noted that this was the only phase of the major appliance division operation located at Bridgeport that had not been transferred to Louisville in 1951.

VITRO UPS BOYCE, KING

Vitro Manufacturing Co., Pittsburgh, producers of ceramic colors and chemicals has announced two personnel changes. Joseph Boyce, who served in several positions at Vitro since 1947, was named general manager of the firm's ceramic division.

Robert King, with Vitro's sales department since 1946, was named sales manager of the ceramic division. Both men will make their headquarters at the company's plant and general offices in Pittsburgh.

ECLIPSE FUEL ENGINEERING BUYS SOLENOID VALVE DIV.

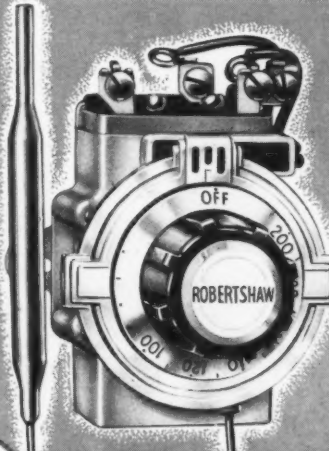
Eclipse Fuel Engineering Co., Rockford, Ill., has acquired the solenoid valve division of Wheaton Engineering Co., Wheaton, Ill., it was announced by A. Campbell Perks, president of Eclipse. The purchase includes complete production equipment, patents, engineering drawings, etc.

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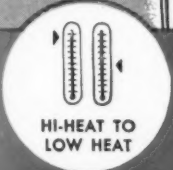
WESTINGHOUSE INTRODUCES AUTOMATIC VACUUM CLEANER

Westinghouse Electric Corp., Mansfield, Ohio, has introduced a new vacuum cleaner complete with cleaning tools. Called "The Automatic", the new appliance is designed to clean more efficiently and to eliminate time-wasting manual adjustments, reports R. E. Dobson, manager of the vacuum cleaner department.

The cleaner features as standard equipment disposable bags, automatic nozzle adjustment — which adjusts to any cleaning or storage position with finger tip pressure and without the use of levers or pedals; nozzle adjustment — which raises and lowers the nozzle automatically for carpets of any thickness; automatic handle — which adjusts to any cleaning or storage position with finger tip pressure and without the use of levers or pedals; and automatic brush roll —



**Robertshaw
MODEL F-1
2 Circuit
Thermostat**




HI-HEAT TO
LOW HEAT

For **SWITCHING**


CUTTING IN

HEATING
CIRCUITS

MOTOR or
BLOWER



HEATER AND
BLOWER



AGITATOR
AND HEATER

The Model F-1 shown here is a single pole, double throw thermostat used to switch circuits from high to low heat where two heating elements are used. For example, an appliance may have one heating element with 4500 watt capacity and a heat holding element with 1000 watt capacity. When the thermostat calls for heat, the 4500 watt element is in action. When the desired temperature is reached, the main contacts are broken, the low heat element is cut in and the 1000 watt element will function until a drop in the temperature causes the thermostat to operate and switch contacts back to the 4500 watt element.

May be used to operate fans in air duct or agitators in tank, etc., in combination with heaters when desired. Write for Catalog.



Robertshaw-Fulton

CONTROLS COMPANY

ROBERTSHAW THERMOSTAT DIVISION, YOUNGWOOD, PENNSYLVANIA

which adjusts to maintain constant contact with the carpet regardless of brush wear.

WATER COOLER SECTION OF ARI ELECTS OFFICERS

George K. Iwashita, of General Electric Company, was elected chairman of the Water Cooler Section of The Air-Conditioning and Refrigeration Institute at a meeting held in Pittsburgh, September 24.

H. H. Ward, of Frigidaire Division of General Motors, was elected vice chairman, and J. F. King, of Halsey W. Taylor Co., treasurer.

The Section members decided to get market statistics every month instead of quarterly, as previously, in order to keep in closer touch with a steadily-growing market. The need for revising industry standards in order to keep up to date on product improvement and design was also discussed.

WELBILT STOVE NAMES TRASK TO AIR CONDITIONING POST

Welbilt Stove Co., Inc., Maspeth, N. Y., has announced the appointment of Allen Trask as chief engineer and production manager of its new air conditioning division. Trask will supervise the development of a full line of room and basement model air conditioners for 1954 distribution.

IN-SINK-ERATOR, JAMES INDUSTRIES JOIN NEMA

The National Electrical Manufacturers Association has announced the affiliation of two more companies with the Household Sinks Section of the Major Appliance Division of NEMA. They are In-Sink-Erator Mfg. Co., Racine, Wis., and James Industries, Inc., Independence, Kan.

FIVE MORE FIRMS ELECTED TO MEMBERSHIP IN GAMA

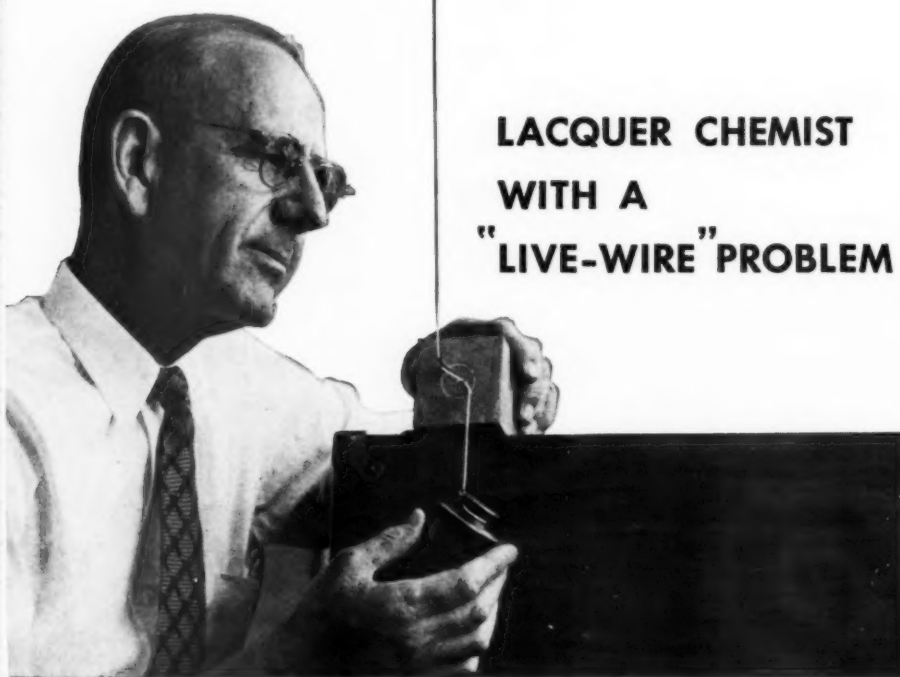
The Gas Appliance Manufacturers Association has announced that Corroaire Heater Corp., Cleveland, Ohio; Modern Controls Corp., Centerline, Mich.; and Locke Stove Co., Kansas City, Mo., have been accepted as members of the gas incinerator division.

Other new memberships include The Parsons Co., Newton, Iowa, manufacturers of trenching machines, and Raypak Co., Inc., El Monte, Calif., producers of copper tube boilers.

This brings to 591 the total members of GAMA, according to H. Leigh Whitelaw, managing director.

TOWNSEND RESEARCH APPT.

Townsend Company, New Brighton, Pa., has announced the appointment of Fred J. Schreiber, Jr. as director of commercial research. He will have the responsibility of organizing a commercial research department which will be concerned with establishing and continuing analyses of markets for the company's various products, including rivets, special nails, fasteners, locknuts, cold-headed parts and formed wire products.



LACQUER CHEMIST WITH A "LIVE-WIRE" PROBLEM

Ferbert-Schorndorfer's Chief Lacquer Chemist, Charles M. Hayes, is scrutinizing the condition of the lacquer-coated braid on a communications wire . . . after a hundred-cycle abrasion test.

A practical scientist, "Charlie" takes nothing for granted when it comes to lacquers. He has formulated and tested custom coatings for thousands of products . . . from fishing poles to automobiles . . . during his 33 year-career in the lacquer business.

Ferbert-Schorndorfer has benefited by Charlie's knowledge and experience for 26 of these years. It is, therefore, little wonder that so many big-name manufacturers rely upon F-S lacquers where maximum durability and protection are vital.

Charlie Hayes is typical of the men who help to keep F-S standards at top level in the paint industry.

For the best in product finishes, write to:

THE FERBERT-SCHORNDORFER COMPANY
A DIVISION OF AMERICAN-MARIETTA COMPANY

12815 Elmwood Ave.



Cleveland 11, Ohio

NOVEMBER • 1953 finish

GENERAL ELECTRIC OBSERVES ITS 75TH ANNIVERSARY

On October 15, 1878, Thomas A. Edison and thirteen associates formed an organization which today is known as General Electric Company.

When G-E observed the 75th anniversary of its founding, it was brought out that the company today has 226,000 employees working in 131 plants in 10 cities in 24 states.

While the electric lamp was the company's first product, G-E now produces a wide range of electrical products valued at over 2½ billion dollars a year.

SYLVANIA NAMES HAYWOOD MGR. OF ENGINEERING PLANNING

The appointment of Dr. O. G. Haywood, Jr. as manager of engineering planning of Sylvania Electric Products, Inc., was announced by Dr. R. B. Bowie, director of engineering.

In his new position, Dr. Haywood will coordinate, in cooperation with executives of the operating divisions and research laboratories, Sylvania's engineering planning in the fields of lighting, radio, electronics and television, with particular emphasis on the long range future of company engineering.

BALLY METAL PRODUCT NAMES BAUER PLANT SUPERINTENDENT



Thomas Bauer, formerly assistant superintendent, has been promoted to plant superintendent in charge of porcelain enameling at Bally Metal Prod-

finish NOVEMBER • 1953

ucts Co., Bally, Pa., according to an announcement by Leonard Melcher, president of Bally Case and Cooler Co., the parent firm.

NEMA APPLIANCE SALES FOR FIRST EIGHT MONTHS

The National Electrical Manufacturers Association has announced sales figures of member companies for the first eight months of 1953 as follows:

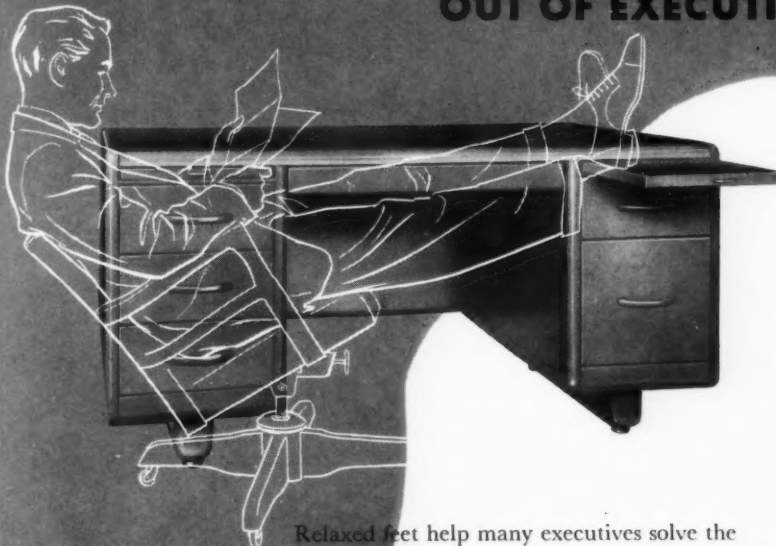
2,742,914 refrigerators, 855,454 electric ranges; 425,952 storage water heaters, and 628,682 farm and home freezers. The figures include export sales.

LEO GOLDBERG DIES

Leo Goldberg, partner in the firm of Porcelain Enamel Finishers, Chicago, died October 18. Ray Gutman, co-partner, said that the firm would continue its present operations.

It happens every day...

DESKS GET A BIG "KICK"
OUT OF EXECUTIVES



Relaxed feet help many executives solve the problems of the day... but they play havoc with the finish on a desk.

Thoroughly familiar with the working habits of the white-collar group, Corry-Jamestown Manufacturing

Corporation designed a highly efficient working unit with many "executive-proof" features.

Even the smooth, hard, "heel-resistant" finish was specially formulated in the Arco Research Laboratory to endure the relentless footwork of men who make decisions.

And speaking of decisions, you can't make a better one than to take your finishing problems to ARCO where experienced formulators tailor quality paints to exacting specifications... and pre-prove performance by Arco Cycle Testing, a system which evaluates finishes to a degree unequalled in the industry. Write for full details.



TESTED FIRST TO LAST

THE ARCO COMPANY • CLEVELAND 27, OHIO • LOS ANGELES 1, CAL
A SUBSIDIARY OF AMERICAN-MARIETTA COMPANY

SPOEHR NAMED HEAD OF NPA GENERAL COMPONENTS DIVISION

The U. S. Department of Commerce has announced the appointment of Victor A. Spoehr, vice president and general manager of H. M. Harper Co., of Morton Grove, Ill., as director of the General Components Div., National Production Authority.

NORGE NAMES BATTLES VICE PRES. OF MANUFACTURING

Appointment of Stewart S. Battles to the new position of vice president in charge of manufacturing and engineering, Norge Division, Borg-Warner Corp., Chicago, was announced

by George P. F. Smith, president.

Battles was formerly vice president in charge of manufacturing of major appliances for Admiral Corporation, which he joined after his own company, Midwest Manufacturing Corp.,

Galesburg, Ill., was sold to Admiral.

In his new position, Battles will maintain close contact with the company's plants in Muskegon and Muskegon Heights, Mich., and in Effingham and Herrin, Ill.

AHLMA parts and service managers discuss "patching, repairing finishes"

A MEETING of the parts and service managers of the American Home Laundry Manufacturers Association was held at the La Salle Hotel, Chicago, on September 25. Presiding at the meeting was John

H. Miller, manager of product service, General Electric Company.

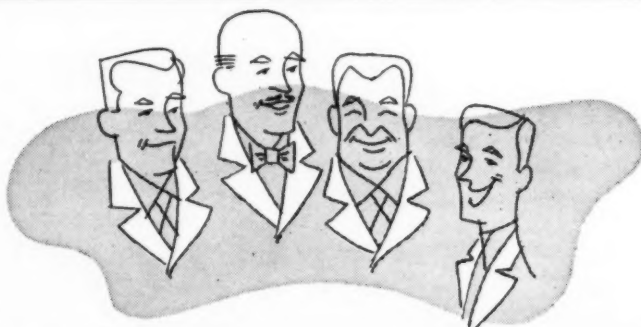
One discussion forum was entitled "Our Special Problems," with H. L. Nichols, sales manager, Beam Manufacturing Co., as moderator. "Viewpoints of the Appliance Parts Jobber" were presented by Ray Jones, member of board of directors and chairman of Manufacturers Relation Committee, Appliance Parts Jobbers Association, and president of Ray Jones Washing Machine Parts Co., Denver. Collaborating with him was John Tribble, president, APJA, and president of John Tribble, Inc., Washington, D. C. The Appliance Dealer Group was represented by R. D. O'Callaghan, member NARDA, and president of O'Callaghan, Inc., Des Moines, Iowa.

"Plumbing Codes and Home Laundry Equipment" was the subject for discussion by E. J. Zimmer, director of Plumbing Testing Laboratory of the City of Chicago.

A forum, "Patching and Repairing Finishes," was moderated by Dana Chase, editor and publisher, *finish* magazine. Panel members included A. S. Ault, vice president — sales, Chicago Vitreous Enamel Product Co. (porcelain enamel), and Robert H. Albrecht, manager of pigmented lacquer division, The Sherwin-Williams Company (enamel).

The discussion included a review of the work that has been done by associations, and by individual companies in both the supply and manufacturing groups toward the satisfactory repair of damaged finished products.

Albrecht outlined satisfactory methods for the repair of damage to organic finished home laundry equip-



All chemists wear white coats!

Unlikely and unimportant but even if they look alike there's an important difference between them. KLEM chemists have dealt with almost every conceivable problem in their field. Their extensive experience enables them to more readily comprehend plant situations than ordinary chemists. The KLEM laboratory, equipped with the finest technological equipment for duplicating exact plant conditions and procedures, enables them to determine the correct answer to tough problems.

Let us help eliminate your bottlenecks, assist you as we have others in establishing profitable production schedules.

Representatives in most industrial areas.

KLEM PRODUCT of the MONTH

MINIT KOTE

Cleans, neutralizes, phosphatizes in 60 seconds. Frees metal surfaces from all traces of oil and dirt. Deposits light, uniform, phosphate coating for better adhesion of paint to ferrous metals and aluminum. Write for details.



3 OF 20 STANDARD KLEM PRODUCTS

KLEM STRIPPER No. 73—Heavy duty hot stripper for paint and enamels, rinses easily, eliminates hand scrubbing.

WATER WASH COMPOUND No. 203—Stops corrosion, keeps lines clean, prevents adhesion of paint to water curtain. Excellent for recovery.

RUST-SOL No. 124—Concentrated phosphoric acid surface conditioner. Removes oil and rust. Provides slight etch to promote adhesion of paint. Meets USA 3-213, TAC-ES431 and MIL-C-10578.

KLEM Chemicals Inc.
14401 LANSON . . . DEARBORN, MICHIGAN



Panel on "Patching and Repairing Finishes", left to right: John H. Miller, of General Electric, who presided at the AHLMA meeting; Robert H. Albrecht, Sherwin-Williams; A. S. Ault, Chicago Vitreous; and Dana Chase, finish, panel moderator.

ment. Ault showed samples of typical "patches." He stressed the point, however, that to date no standardized procedure has been developed for successfully repairing porcelain enamel field damage to the point where the "patch" is comparable to the original finish. (There will be more on this subject in later issues of finish.)

ROPER RE-DEFINES ITS MANAGEMENT ORGANIZATION

As part of a program to streamline operations of its expanded facilities — appliance, pump, and ordnance divisions — Geo. D. Roper Corporation, Rockford, Ill., has broadened and re-defined its organization of management.

In line with this, Stanley H. Hobson, president, announced the appointment of John H. Makemson, vice president, as general manager of the appliance division. He is in charge of all gas range and dryer manufacturing and sales.

E. Carl Sorby, vice president, was named to head up trade and public relations for all divisions of the company.

Heading up a new market research division is George E. Martin, formerly a professor of marketing at the University of Illinois.

ROLLED ALLOYS APPTS.

Rolled Alloys, Inc., Detroit, has announced the appointment of Rob-

ert C. Ford as territorial manager with offices in Pittsburgh. He was formerly associated with the alloy tube division of Carpenter Steel Co.

Rollow W. Boring, sales manager, also was recently elected vice president in charge of sales.

ING-RICH SOUTHERN REP.

R. H. Coin, president of Ingram-Richardson, Inc., Frankfort, Ind., has announced the appointment of Burdett Boggs as southern frit representative. Boggs has been associated with Ing-Rich for 20 years, and recently was assistant plant superintendent. He will headquarter in Shelbyville, Tenn.

"Looks Like the Finest Heating Method and Equipment We'll Ever Find!"

STATES MORRIS MARKIN, PRESIDENT
CHECKER CAB MFG. CORP., KALAMAZOO, MICH.

Army cargo trailers are part of the production at Checker Cab Mfg. Corp. Jensen Pan-L-Heat ovens are baking on the olive drab finish.

In addition to taxicabs and buses, Checker produces 100 cargo trailers per eight-hour day. At the same time, 200 wheels and wheel rings are processed during the trailer operations. Wheels are placed between the trailer bodies, while rings go through the ovens between the chassis.

Jensen Pan-L-Heat Ovens are now being used for processing these

trailers. R. E. Smith, Assistant to the President says, "We're sold on these electric Pan-L-Heat Ovens! For one thing, they're safer than any other type of oven I've seen. There's no danger of broken glass because there are no glass bulbs to break. Manpower has been cut down to a minimum. We're especially well pleased with the Automatic Temperature Control of the Jensen ovens. They switch on and off according to the temperature required."

YOUR PLANT CAN HAVE

- Increased pay load realization.
- More effective use of electric heat.
- Uniform, high quality production.
- Superior results with shorter heating cycles — at lower energy consumption.



SPECIALTIES, INC.

REPRESENTATIVES
IN PRINCIPAL
CITIES

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Detroit 28, Mich.

THERE'S HEAT THERE'S

FAHRALLOY

WHERE

FAHRALLOY...

WHERE THERE'S HEAT THERE'S FAHRALLOY WHERE THERE'S HEAT THERE'S

LOY WHERE THERE'S HEAT THERE'S FAHRALLOY

BURNING TOOLS

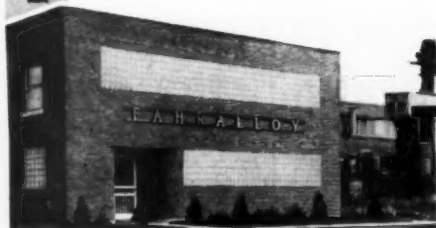
No. 1 Choice of the Porcelain Enamel Industry



There's always good reason why one product forges ahead to leadership in its field. Product performance, more than any other one factor, is largely responsible for this success. It is product performance which has made Fahr alloy burning tools the No. 1 choice of the porcelain enamel industry . . . product performance for over 20 years. When Fahr alloy alloys chrome, nickel and other metals to cast burning tools the specific service conditions which the castings must meet are given full and careful consideration. Then the metallurgically correct composition is determined to assure longest possible life under those tough service conditions at the high temperatures involved. With such exacting standards, is it any wonder why porcelain enamellers just naturally turn to the leader . . . to Fahr alloy for the answer to their burning tool problems? You'll find your answers at Fahr alloy, too.

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DAYTON Area Representative

CLARE CHARRON • 509 Curtis Building • Trinity 5-7633
DETROIT Area Representative



THE FAHRALLOY CO.

150th & Lexington Ave. — Harvey, Illinois
In Canada — Fahr alloy Canada, Ltd., Orillia, Ontario

PEI annual meeting

→ from Page 66

that a third of the farmers in the country plan to repair or replace the roofs on one or more of their buildings at the earliest opportunity.

If porcelain enamel could capture only one-tenth of 1% of the total

roofing market — and this would seem to be a conservative goal — it would amount to between 9 and 12 million square feet a year.

All three markets are building construction materials. All three, therefore, are a part of one of the biggest industries in the country —

an industry in which the demand still exceeds the supply. With a better product than our competitors, with well controlled quality standards, and with aggressive selling, enameled chalkboards, roofing, and bathtub enclosures offer excellent volume and profit opportunities.

Porcelain enamel in the building industry

BRAB conference to be conducted by Building Research Advisory Board at National Academy of Sciences, Washington, D.C., November 12-13

ON November 12 and 13, 1953, a conference on "Porcelain Enamel in the Building Industry" will be sponsored by the Building Research Advisory Board and the Porcelain Enamel Institute. This conference, to be held at the National Academy of Sciences, Washington, D. C., will have as its chairman G. A. Hutt, vice president, Ferro Corp.

The conference, the first to be conducted by the BRAB Institute, differs from past Conferences conducted by the Building Research Advisory Board in that a specific material will be taken under consideration.

It is expected that architects, builders, contractors, engineers and technologists in the building field will attend to get a clear picture of the varied applications of the material under consideration in building construction. Representatives of the various interested branches of Government are expected to attend.

BRAB has extended an invitation to all those primarily interested in

the enameling industry to have representatives attend the meeting.

On the first day of the meeting, Norman P. Mason, president of

BRAB Institute, will welcome those in attendance at the conference, with a response by W. A. Barrows, president, Porcelain Enamel Institute.

BRAB PROGRAM

Chairman: G. A. Hutt, vice pres., Ferro Corporation

SESSION 1 — Fundamental Properties of Porcelain Enamel

- | | |
|--|---|
| Porcelain Enamel—from an Ancient Art to a Modern Industrial Material | Dana Chase, editor, <i>finish</i> |
| Chemical Characteristics, Resistance to Acid, Alkali and Chemical Attack | Dr. G. H. Spencer-Strong, dir. of research, Pemco Corporation |
| Physical Properties, Abrasion, Impact, Flame and Heat Resistance, Reflectivity, and Strength | E. E. Howe, dir. of research, Chicago Vit. Enamel Product Co. |
| N.B.S. Weather Resistance Study of Porcelain Enamel Structural Units | D. G. Moore, Enameled Metals Section, Natl. Bur. of Stds. |
| Radiochemical Decontamination Characteristics of Porcelain Enamel | G. W. Parker, senior chemist, Chemistry Div., Oak Ridge Lab. |
| Participation from Floor | <i>Moderator: Dr. G. H. McIntyre, vice president, Ferro Corp.</i> |

SESSION 2 — Uses of Porcelain Enamel in Building Design

- | | |
|---|--|
| Design, Manufacture, and Erection of Porcelain Enamel | M. J. Salton, president, Seaport Metals, Inc. |
| Porcelain Enamel Curtain Walls and Their Utilization in the Building Industry | E. X. Tuttle, vice pres., Giffels & Vallet, Inc. |
| An Architect's Viewpoint of Porcelain Enamel, Used Alone and with Other Materials | William Lescaze, architect, New York |
| Participation from the Floor | <i>Moderator: J. C. Terry, Armco Steel Corporation</i> |

SESSION 3 — Porcelain Enamel as an Engineering Material

- | | |
|--|--|
| Engineering Properties of Porcelain Enamel | F. R. Nagley, Bureau of Ships |
| Flues, Furnaces and Exhaust Systems Using High Temp. Porcelain Enamel and Ceramic Coatings | Dr. A. I. Andrews, University of Illinois |
| Insulation, Sealing, and Condensation Control in Metal-Cased Buildings | Prof. Elmer R. Queer, Pennsylvania State College |
| Porcelain Enamel Coatings on Aluminum | B. C. Bricker, E. I. duPont de Nemours & Co., Inc. |
| Participation from the Floor | <i>Moderator: R. C. Myers, United States Steel Corp.</i> |

SESSION 4 — Building Experience with Porcelain Enamel (problems, solutions, costs)

- | | |
|----------------------|--|
| Hospitals | Aaron Kiff, York & Sawyer, Kiff, Colean, Voss & Souder |
| Sales Structures | P. R. Fritsch, Goodyear Tire and Rubber Co. |
| Houses | W. W. Lobdell, Lobdell Realty & Construction Co. |
| Industrial Buildings | Milton Male, U. S. Steel Corp. |
| Conference Summary | William H. Scheick, BRAB exec. director |

Glenn Hutt (left), conference chairman, with Harold Sylvester, director of field service for BRAB.



Design for salability—a key to industrial success

(Continued from Page 42)

fundamentals of the style element from the production level, costs of tooling and re-tooling for manufacture must always be taken into consideration.

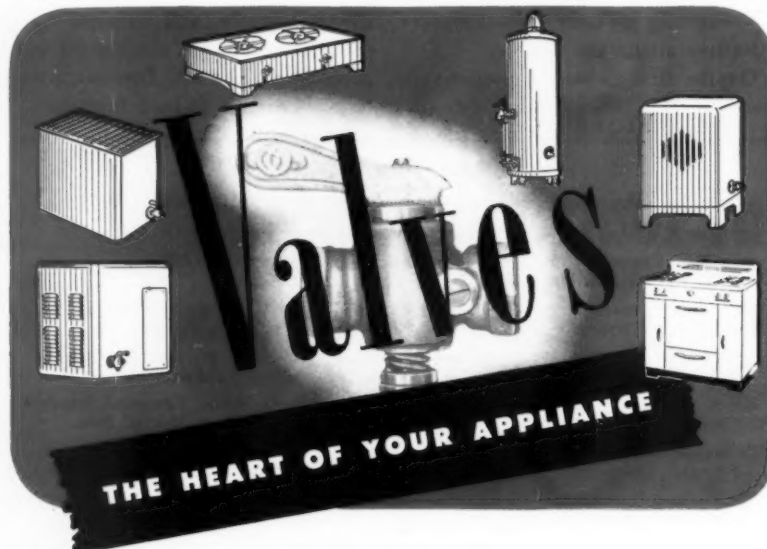
Design consideration should be a long-range plan

The industrial strength of America today is geared to a complex finan-

cial and organizational machine for mass production. The cost of tools and dies is high — almost prohibitive of too frequent changes in models, especially of heavy equipment. When we think of design today, then, we must think in terms of the long range rather than the short, in terms of five years instead of one. Style changes must be considered on the basis of

the variation on a theme of a basic design. These slight changes can keep the product in time with fashion trends — by the use of color, texture in treatment, surface finishes — but they must be financially feasible.

This fact is obvious if you will take the automotive field as an example. There was a time when we looked for yearly changes in models with a great deal of excitement. Today, however, the public is accustomed to only slight modifications from year to year in the shape of a fender, a new grill treatment or changing sweep of the tail light. Our excitement is stirred more definitely, of course, by the occasional entry of a completely new model to the field. But the radical departure is not the rule . . . and even those models that appear to be radical will, on closer inspection, prove to be more evolutionary than revolutionary in the design department. The cost of new dies for a revision in fender design may run to better than a quarter-of-a-million dollars. Extend this figure to a complete revision of automobile design and you will understand the reason for steady modification rather than complete revision in any model year.



BE SURE THEY'RE THE BEST

Your appliance is as good as the valves you use. Ultimate consumer reaction is influenced by valve efficiency and dependability.

Materials, workmanship and engineering knowledge incorporated in your appliance demand valves of comparable calibre—valves that not only enjoy the long-standing recognition accorded to Detroit Brass products, but also valves backed by the assurance that they are designed to perform for the life of your appliance. That's why we say—

BE SURE THEY'RE DETROIT BRASS

.....
INDUSTRIAL PRODUCTS DIVISION
DETROIT BRASS & MALLEABLE CO.
DETROIT 9, MICHIGAN

The re-design treatment

This example of restrictions in design changes for reasons of economy can be extended to the broad field of *home appliances* and furnishings and even industrial equipment. When the industrial designer develops a new or re-designed toaster, he thinks of model changes for perhaps three years . . . perhaps advising new handles, a new range of colors or a new surface treatment for each year. With a vacuum cleaner he may advise re-design of the attachments from year to year or new treatment of the bag fabric. He will most logically consider the *design* as a long-run basis for development, the *style* as the variable factor from year to year.

Appraisal of designer's value

If we are to assume the net worth of the designer to be a stylish who adds chrome strips or three little beads, who paints it green, or applies a three-dimensional nameplate, we

have placed the designer in an extremely superficial position, and our client in a superficial and untenable sales area. This type of ridiculous performance, operating barely ahead of the consumer's conditioned style sense, can produce a fast buck for the client. But so did the work of the unknown wonder-boy who put a pin-wheel on a beany a few years back and who, I suppose, is this moment sitting and wondering what happened to the pin-wheel beany market.

An educational problem

If we are approached by a client whose concept of design is as trivial as that, we must do our best to correct this short-sighted management concept. Probably he has established values which he attaches to engineering and research. He can tell you within a fraction what his accounting should cost him. His patent structure is a known and calculable expense. Advertising is an automatic part of his plan. Sales expense is established almost to the dollar. But today design is a profession so young and with so few known standards of performance and commission that our unfortunate client too frequently finds himself in a vacuum. He does not know what the net worth of design is at point-of-sale. Probably he does not know what good design itself is. He does not know what it should cost and he does not know what result he is entitled to expect. He probably knows that some successful competitors are using designers, or feels some vague dissatisfaction with an accomplished engineering fact which disturbs him.

Those of us who are in the field of design are, I regret to say, unable to provide factual, unbiased case histories as to our own net worth. We are much in the position of the advertising agency or the public relations officer. All of us can point to fabulous sales records. Unfortunately, our 200 or 300 per cent sales increase stories are over-simplifications of the fact. Certainly a graciously designed product will hang up a fine history of sales against a previous dud. It is equally true that a well-promoted or well-advertised product will do well

against one poorly promoted or not advertised. It is difficult to get exact clinical figures to present so that we can thump our chests and state unequivocally that if you come to our office for design we can guarantee a 21 per cent increase in your business.

These things, however, are known. Good design is basic. Good design is inherent. Good design is a synthesis of pleasant and efficient use in a well built structure. I must personally state my faith in the unimpeach-

able concept that good things survive in the face of bad; that soundness will survive against the unsound. By definition, therefore, good, sound design must become a permanent, long-range investment in corporation health. Its style or fashion aspects, while important, must be considered momentary and opportunistic.

Adapted for finish from a presentation at a special Product Design Seminar for business executives at Massachusetts Institute of Technology.

OUR PLANTS are part of your production line...



Arthur Godfrey

**"Fiberglas* Insulation
is one of the best
sales features
you can give your dealers"**

Listen to Fiberglas' "GODFREY DIGEST" every Sunday on CBS



*FIBERGLAS is the trade-mark (Reg. U. S. Pat. Off.) of Owens-Corning Fiberglas Corporation for products made of or with fibers of glass.

WEST COAST ENAMELERS

DISCUSS METAL CLEANING

Some 40 members of the Pacific Coast Enamellers Club met in regular session Friday evening, September 18. After the usual business was conducted, Hyman Leggett, of California Metal Enameling Co., and Club president, appointed a nominating committee to select candidates for new officers.

Roy Armour, chief chemist, Chemical Processing and Engineering Co., was speaker for the evening. He discussed metal cleaners, neutralizing solutions and acid dips in relation to their effect on enameling. Armour told how different cleaners attack and remove different soils, and pointed out the importance of effective agitation and adequate rinsing.

Some important highlights in Armour's talk were . . . "Heat solution tanks evenly throughout. If the solution must boil, make sure that it is boiling from one end of the tank to the other — not just in spots . . .

Roy Armour demonstrates how oil-soluble hydrocarbon chains, attached to water-soluble cleaner molecules, enter an oil globule and "pull" it from the surface of the metal. This "pull" is aided by proper solution agitation.



finishfoto

To increase the activity of an acid pickling solution, raise its temperature, not the concentration of the solution . . . Every enameler must know the limitations of his solutions or trouble will result . . . In all cases, use all the rinse tank capacity that is available."

An interesting sidelight at the meeting was a report by Frank Fernholtz, Club secretary, that during the preceding month, the movie industry had requested aid from the Pacific

Coast Enamellers Club to provide a ceramic room setting for Joan Crawford's initial television appearance.

FERRO ANNOUNCES CONTEST ON ENAMELING TECHNOLOGY

Ferro Corporation, Cleveland, has announced that entry blanks in the "annual student contest in porcelain enameling" must be mailed to Ferro Corporation, sponsor of the contest, by November 23, 1953. Papers must



**WHEN THE TASK REQUIRES
THE BEST THERE IS . . .
ANALYTE IS ON THE JOB!**

Westinghouse Electric Corporation, Mansfield, Ohio uses the Analyte Color Comparator for visual color comparison in their Quality Control Department.

On jobs like this—where superior engineering skill often means a competitive advantage—the new Analyte Color Comparator has proved a major tool in achieving success. In the home appliance, automotive, chemical, cosmetic, textile, printing, paper, plastic and many other industries, correct color comparison is a prime factor in manufacturing know-how.

The Analyte Color Comparator scientifically reproduces "natural daylight" which makes possible human eye detection of the slightest color variations.

Many outstanding American industrial firms are now using Analyte Color Comparator as standard equipment — a tribute to its outstanding performance.

For details write to:

**CROWN ENGINEERING
AND SALES CO.**

421 Hill Street, Harrison, N. J.

Specify **MEYERCORD DECAL** *Transfers*



—for long
day-after-day
production runs—

—for difficult
highly-specialized
applications



**Meyercord Laboratory and Production Experience
— PLUS Unexcelled Service — to Serve You Better!**

Sometimes we are too prone to tell our friends about the spectacular achievements of Meyercord in solving those "impossible" decal transfer applications... like the new E-51 aircraft decals that resist up to 900 degree temperatures of jet engines, as well as the ravages of strong solvents and aircraft fuels. Specialized decal applications are a mighty important part of our business... but we're still first and foremost in the business of supplying standard Meyercord nameplate and identification decals. Whether you make typewriters, appliances, electrical

conduit... any product that is turned out on long-time production runs, be sure to investigate the advantages of Meyercord decal transfer *uniformity, fine quality and absolutely unbeatable service* on your production line.

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MEYERCORD DECAL NAMEPLATES
Shows hundreds of uses for durable, washable decal nameplates... as trademarks, instruction charts or diagrams—in any size, colors, or design. This manual is FREE... request it on your business letterhead, please.

THE MEYERCORD CO.
World's Largest Decalomania Manufacturers

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Have YOU Tried
W-A1

METAL CLEANER

for immersion cleaning
prior to porcelain ename-
ling? It's a specification
material that has proved
its worth in many ena-
meling plants.

Same Quality
and

Same Price

for over 4 years



MANUFACTURERS OF
LEPCO PRODUCTS

V. B. PUNDERSON COMPANY

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CLEVELAND HEIGHTS, OHIO



**WRITE FOR
COMPLETE INFORMATION**

**V-BELT PULLEYS
FOR ANY APPLIANCE!**

Nagel-Chase Pulleys are designed so that the pulleys can never become loose from the solid steel hub. They are made in several styles, with or without bushings — also as step-down pulleys.

Whatever your pulley or caster requirements, do as many leading appliance manufacturers have done — consult Nagel-Chase. It pays!

THE NAGEL-CHASE MANUFACTURING COMPANY
2811 N. Ashland Avenue, Chicago 13, Ill.
SPECIALISTS IN CASTERS AND PULLEYS FOR NEARLY A QUARTER CENTURY!

ALSO MANUFACTURERS OF NAGEL-CHASE WASHING MACHINE CASTERS

be submitted on or before February 26, 1954.

Prizes totalling \$1000 will be awarded for best papers on porcelain enameling technology, with the awards being made at the 1954 convention of the American Ceramic Society, to be held next spring.

The contest is open to all students,

both graduate and undergraduate, who are registered in ceramics or ceramic engineering, and who are majoring in those subjects. Contest rules are available from the department head of universities having ceramic engineering departments, or from Ferro Corporation.

Vacuum cleaners mfrs. association observes 40th anniversary

MEMBERS of the Vacuum Cleaner Manufacturers' Association met at the Homestead Hotel, at Hot Springs, Va., on September 24, to celebrate the 40th anniversary of its founding. Walter Dietz, president of Electrolux Corporation, New York City, is the Association's present head.

C. G. Frantz, president of Apex Electrical Manufacturing Co., Cleveland, has been the Association's secretary-treasurer for 35 years.

Frantz's extended service for the industry makes his position secure as a member of a group of variously estimated at only ten to twenty trade association executives with equally long records.

At the inaugural session in Hotel Secor, Toledo, October 21, 1913, the eleven founding companies got off to a running start with a treasury fund

totalling \$55.00, obtained by levying each charter member \$5.00 with which to defray operating expenses.

"Of course those early days were days when \$5.00 was real money, even a liberal day's wages," commented Frantz as he surveyed the minutes of the first meeting, at which each of the eleven founders was assessed that amount for organization expenses. Of the founders, only four survive today as companies or brand names, namely: Clements, Eureka, Hoover and Premier.

Of the 16 industry leaders present at the first meeting, H. W. Hoover, chairman of the board of The Hoover Company, North Canton, Ohio, is the sole survivor.

First recorded production figures of the industry are for 1918, when the organization was five years old.



C. G. Frantz, president of Apex Electrical, has been secretary-treasurer of Vacuum Cleaner Mfrs. Assn. for over 35 years.

Sales that year were 370,000 units. In the first six months of 1953, factory sales of cleaners topped all but eight of the industry's full years. Sales aggregated 1,549,645 units in that period.

The Association enjoyed twelve plus-1,000,000 years before World War II. Post-war sales ranged annually from 2,300,000 to 3,600,000 units. By the end of 1953, the industry had produced 45,000,000 standard-size household vacuum cleaners. It was estimated that the total would reach 47,500,000 by the end of October.

Water heater corrosion studied at Case symposium

WATER heater corrosion was subjected to a thorough examination during a four-day symposium conducted recently at the Case Institute of Technology, Cleveland, Ohio.

Attended by 57 manufacturers, the meeting "not only produced a wealth of information about the causes of such corrosion, but also resulted in suggestions for direct action which may enable manufacturers themselves to combat corrosion more effectively, and also to enlist the support of water supply companies in solving some of the corrosion problems," ac-

cording to Harold Massey, assistant managing director of the Gas Appliance Manufacturers Association, sponsor of the Case symposium.

One of the principal subjects discussed was the possibility of classifying waters in five or six groups so that water heater manufacturers might reasonably predict the useful life of a tank using the various types of water. This discussion, Massey said, has already resulted in preliminary conversations with representatives of the American Water Works Association.

The water classification idea evolved after talks by Dr. Thurston E. Lawrence, of the Illinois State Water Survey, on "The Chemistry of Water," and "The Langelier Index and Its Significance to the Corrosion of Hot Water Tanks."

Prof. Robert C. Weast, who directed the symposium for Case Institute, led discussions on the "Electrochemistry of Corrosion," "Cathodic Protection" and "The Role of Polarization in Corrosion Control."

Dr. Weast illustrated the point that corrosion is really "the loss of metal

from a crystal lattice accompanied by a flow of electrons." It was shown that any means which will prevent the flow of electrons will prevent electrochemical corrosion, and that cathodic protection provides the means of reversing the flow of electrons which normally accompanies corrosion. The necessity of reversing the flow of electrons to all exposed portions of the tank was emphasized.

Prof. Lawrence Seigel, of Case Institute, talked on the "Fundamentals of Heat Transfer." He showed that scale formation on the inside of the tank would increase the temperature of the metal by 20° to 80° F., depending on the heat input of the burner in the water heater. On the basis of Professor Seigel's presentation, it appeared that scale formation would not increase metal temperatures enough to significantly alter the corrosion rate of the tank.

Dr. B. J. Sweo, of Ferro Corp., Cleveland, discussed the use of vitreous enamel as a means of combating corrosion. Dr. Sweo presented data to illustrate the physical and chemical properties of the enamels which currently appear practical for use in contact with hot water.

Henry Shildener, of Water Service Laboratories, New York City, presented practical problems associated with hot water systems and tanks in buildings supervised by his company. He said he believed greatest difficulty arises from the higher temperature water being used today, and stated that water temperatures should be maintained below 140° F. He also

showed the adverse effect of high oxygen concentrations in water.

Dr. William Stericker, of Philadelphia Quartz Co., presented data and photographs to show that proper application of either one of two different sodium silicates will stop the corrosion of hot water systems. The particular silicate to be employed is a function of the pH of the water. It was of interest to the group that the films formed by silicate treatment are exceedingly thin and are not to be confused with the scales normally thought of in water treatment.

Dr. George Hatch, of Calgon, Inc., discussed the use of polyphosphates as a means of controlling corrosion in hot water tanks.

Dr. Edward G. Bobalek, of Case Institute, reviewed the behavior of plastics in hot water. He discussed the chemistry and physical properties of ten of the more important plastics. Water permeability and adhesion were discussed in detail. In general, it was stated that those plastics which are least permeable are also those which adhere least strongly to steel.

The conference was closed by a discussion of the corrosion of steel and galvanized steel by Dr. Weast. Factors contributing to the reversal of potential of iron and steel were discussed. Slides showing the effect of water temperature, burner input and daily draw-off were presented. A theory to illustrate that reversal of potential between zinc and steel may not be as important to the early failure of galvanized steel tanks in some geographical areas as has been re-

cently hypothesized was discussed. Of greater significance, Dr. Weast said, is the fact that high temperature water greatly accelerates the corrosion rate of iron.

Gas plating . . .

→ from Page 56

be obtained through use of a reducing atmosphere furnace. Radiation heating may be used, but dielectric or induction methods of heating may also be employed. A plating chamber where atmosphere and temperature can be properly controlled is employed, the atmosphere being made up of carrier gas and the particular metallic compound being employed. The carrier gas is usually carbon dioxide.

Concentration of the metal compound in the carrier gas, rate of flow of the plating atmosphere, and temperature of parts or material being plated, all play a part in controlling the final deposit. Through proper control of these factors, primarily and also relatively, the operator has a certain amount of control over the speed of plating, as well as over density, ductility, and thickness of plating deposited.

Since close control over the flow of carrier gas, before it is mixed with the metal compound (which mixing is accomplished in a suitable carburetor), and close control over the flow of the mixture are both important, highly-developed flow meters become an important part of the layout. Highly-developed flow meters are used for both of these flow-control functions.

Water heater manufacturers shown in session at symposium held at the Case Institute of Technology, Cleveland, Ohio, under sponsorship of the Gas Appliance Manufacturers Association. The meeting was attended by 57 manufacturers.





Whirlpool lines up "a day's production" at open house

(look for big Special Section of January finish on Whirlpool Corporation)

AS part of a two-day community open house, October 1-2, Whirlpool Corporation, St. Joseph, Michigan, dramatically displayed materials and finished products that comprise a 16-hour production day.

An estimated 13,000 visitors were escorted on a tour of Whirlpool's plants which occupy more than a million square feet.

Feature of the celebration is shown in the above photo. This exhibit (on highway bridge spanning the plant)

included 500 automatic washing machines and clothes dryers, extending side-by-side for 1292 linear feet, representing two hours production at the current daily rate, and 100 trailer trucks without cabs, totaling 3200 linear feet, used daily to haul component parts and raw materials for the current daily output of 4000 units, as well as 40 railroad freight cars extending for 1760 feet, the number required to ship one day's production. Up-ended, a single day's

production would make almost 12 stacks, each as high as the Empire State Building.

The name Whirlpool was spelled out in a sign 20 feet high and 100 feet long on the roof of one of the plants (foreground in above photo). It was made up of 104 automatic washing machine tubs. Other parts of the exhibit included 600 tons of parts and materials.



Additional Statistics

(in terms of a day's production)

- 200 tons of sheet
- 93 tons of bar steel
- 41 miles of elec. wiring.
- 2000 gal. of grease and oil
- 4 miles of adhesive tape
- 20 tons of electric motors
- 900 gallons of paint
- 500 pairs of gloves
- 50 tons of cardboard
- 30 gallons of glue

NOVEMBER • 1953 finish



November • 1953

safe transit

FROM ASSEMBLY LINE TO FINAL CUSTOMER

Acme Steel Strapping Insures S.A. *(Safe Arrival)*

and builds good will for Admiral Corporation



QUALITY CONTROL of Admiral television receivers extends beyond the assembly lines and into the shipping department where Acme Steel strapping is used to insure safe arrival of TV sets in the hands of distributors.

Admiral Corporation, Chicago, "world's largest manufacturer of television receivers," changed its method of shipping TV sets three years ago and 1) eliminated previously heavy damage in transit losses; 2) gained a tremendous amount of good will with its distributor organization.

Up until 1950, Admiral TV sets were placed in shipping cartons and loaded solidly into freight cars. Frequently the sensitive electronic tubes and complex wiring systems in the sets were damaged en route to distributors.

Then Admiral called in Acme Steel shipping

specialists to analyze the problem and help cut this loss. W. J. Curtis, traffic manager, tells what happened:

"Since we started using Acme Steel Strapping at our Chicago plant as a shipping safeguard three years ago, we have not had a single TV set damaged in transit which was attributable to improper loading or strapping failure."

Acme Steel Strapping can insure Safe Arrival for your products. Write for details to Acme Steel Products Division, Dept. F113, ACME STEEL COMPANY, 2807 Archer Avenue, Chicago 8, Ill.

ACME STEEL
CHICAGO

**ACME
STEEL**

STRAP IT . . . STITCH IT . . . SHIP IT . . . SAFELY!

safe transit

A monthly trade publication section devoted to improved packaging and shipping and materials handling practices in the home appliance and metal products manufacturing field.

Plant experience information for all executives and plant men interested in the problem of packaging and shipping improvement and loss prevention.

Complete information on the National Safe Transit pre-shipment testing program for packaged finished products, and detailed progress reports of divisions and sub-committees of the National Safe Transit Committee.

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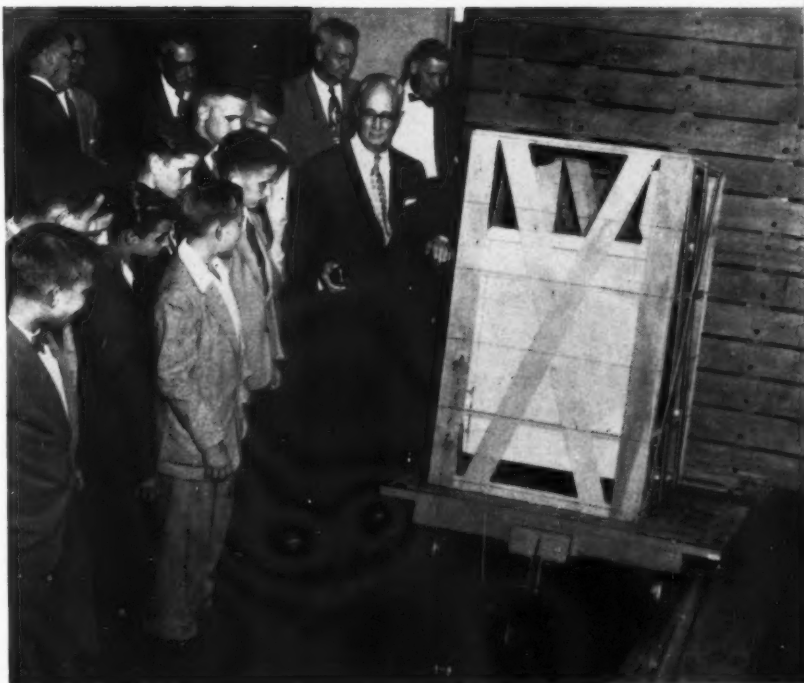
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**CANADIAN PACKAGING SHOW
IN TORONTO, NOV. 3-5ST-19**

SAFE TRANSIT NEWSST-20

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Conbur incline impact tester — is demonstrated by N. A. Fowler, director of sales and research, General Box Co. Occasion was an open house held by General Box to celebrate the Des Plaines (Ill.) Pony League baseball championship won by this team sponsored by General Box.

A 7-foot revolving test drum — used to determine the efficiency of a box to retain its contents — is one of many tests on containers which are regularly conducted at the Association of American Railroads Container Testing Laboratory. An early issue will feature an article on this lab.



CUSTOM DESIGNED

HEAVY-DUTY SHIPPING CONTAINERS



Container cut away to show protective design.

Base of container shows new type skid.

WELBILT

streamlines packing methods

Welbilt Stove Company has been shipping stoves in International's special design "Cap and Tube" shipping container for 18 months with these successful results:

- Quick, easy packing—saves 33 1/3% on labor.
- Stress at attachment points eliminated—no bolts or fastening to skids.
- Claims for damage in transit less than 1/2 of 1%.
- Warehouse dust and dirt eliminated—stove completely encased in protective covering.
- Greater ease in unpacking.
- Large printing surfaces permit strong product identifications.

This highly efficient container was custom-designed and thoroughly tested in our modern Georgetown Container Laboratory—an official testing laboratory certified by the National Safe Transit Committee of the Porcelain Enamel Institute.

We would like to tell you more about the development of this and other specially designed containers. Write to any of the manufacturing plants listed below.

GRAND AWARD!

International won the only Grand Award given at the First Annual Competition of the Fibre Box Association. All seven International entries won ribbons!



International Paper company

CONTAINER DIVISION

220 East 42nd Street, New York 17, N. Y.

Los Angeles 54, Cal.
5120 South Soto St.

Kansas City 3, Kan.
2102 Kansas Ave.

Somerville 45, Mass.
Clyde & Warwick Sts.

Wooster, Ohio
689 Palmer St.

Springhill, Louisiana

Georgetown, So. Carolina.

St. Louis 11, Mo.
7901 Michigan Ave.

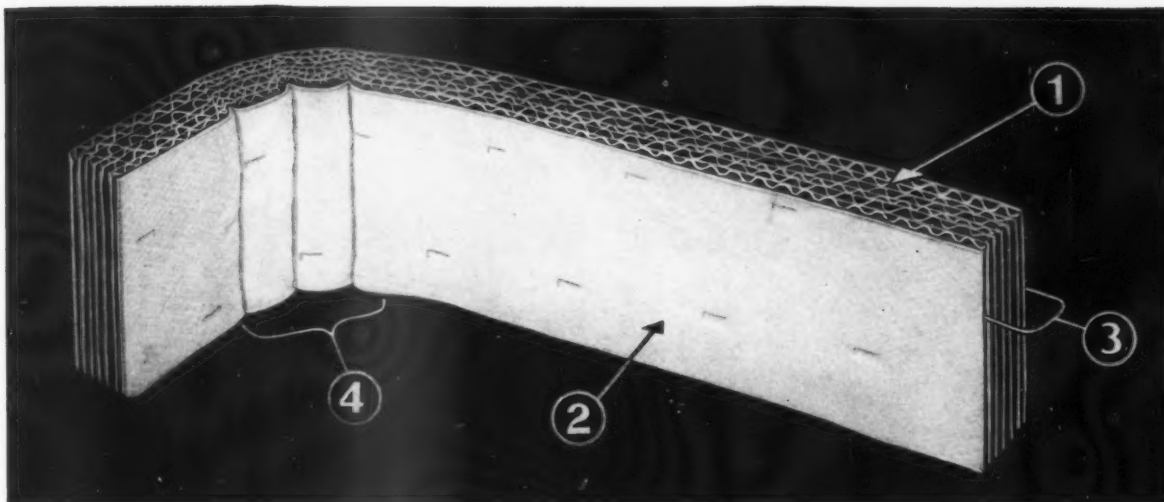
Chicago 38, Ill.
5133 West 65th St.

Whippany, New Jersey

Manchester, N. H.

ST-4

NOVEMBER • 1953 finish



HOTPOINT USES 4 POINT MENASHA PAK TO "FLOAT" ITS REFRIGERATORS TO MARKET...

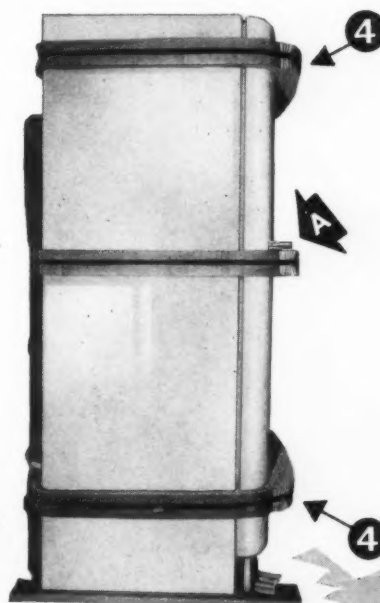
1. Shock Absorbing Outer Pad
2. Non-abrasive Kimpak Facing
3. All in One Unit for Easy Application
4. Moulds Around Corners

Menasha Pak is the answer to your problem of protecting fine exterior finishes of home appliances, furniture, and other products with high inspection finishes . . .

Menasha Pak handles your product with kid gloves. The thick outer corrugated pad absorbs all shocks, the inner Kimpak facing protects the surface. It's all in one solidly laminated unit and can be moulded tightly around the sharpest corners, then locked into position in a single operation.

Menasha Pak saves the surface, saves man hours, and saves claims. All types of interior packing pads built to your specifications. Give us your problem and our designer will help you solve it.

A Showing application of Menasha Pak to a Hotpoint Refrigerator



menasha pak **
Non-abrasive interior packing TRADE MARK

MENASHA WOODEN WARE CORPORATION
Menasha, Wisconsin • Founded 1849

Manufacturers of Corrugated Containers and Interior Packing Specialties



Overhead cranes in high bays in storage and loading area make handling and loading processes swift, safe, and damage-proof.

Packaging operations for Hotpoint refrigerators

(production story continued from Page 35)

AS the Hotpoint refrigerator reaches the end of the assembly line and flows into the crating line, the refrigerator picks up the bottom cardboard packing from an automatic feeder underneath the roller line. As it moves on, additional packing and crating materials are added. It finally merges with the electric range line in the warehouse area.

A special feature in the new refrigerator plant is a reversible storage conveyor which can be used as a protection bank to insure production on the refrigerator assembly line. It also makes possible scheduling simultaneously two models on the assembly line while the fabrication line is running other models.

The warehouse is specifically designed for efficient storage and shipping of ranges and refrigerators. Three railroad tracks are located in the shipping area. Thirty-six freight cars can be spotted in loading position within the building. In loading freight cars with appliances for shipment, Hotpoint uses the staggered loading method plus a steel strapping system.

Another feature of the warehouse permits Hotpoint to ship mixed car lots to distributors and dealers. A conveyor from the range plant merges with another line from the refrigerator plant and feeds into each of six bays. These bays are 100 feet wide and 300 feet long. Overhead cranes

above each bay allow rapid storage of ranges and refrigerators.

Ranges are crated in the range plant, and refrigerators are packaged on the assembly line. A centralized system permits crane operators in each bay to direct ranges or refrigerators into a desired area, eliminating manual handling of packaged appliances. When a refrigerator or range is moved into a designated bay, it is directed to one of two conveyors in the bay. One conveyor is used for make-up and the other for movement of appliances into storage.

The entire system is geared to eliminate human handling as much as possible, and enables Hotpoint to load directly into cars from assembly lines.

(There will be more on materials handling and packaging and shipping at Hotpoint in a later issue.)

Switch bars at point where refrigerator and range lines converge in storage area is shown here. By pushing buttons, operator can get any combinations desired for loading, which permits mixed carloading for distributors and dealers.

As conveyor lines from refrigerator and range plants come into storage and loading area, a "switchman" controls the order in which they arrive, and where they go. This facilitates rapid handling in the area.



INDUSTRIAL PACKAGING, HANDLING SOCIETY ELECTS OFFICERS

Stanley Price, of Western Electric Co., Chicago, and Earl B. Candell, of General Electric Co., Lamp Division, Cleveland, have been elected *chairman of the board* and *president*, respectively, of the Society of Industrial Packaging and Materials Handling Engineers.

The election was announced from SIPMHE national headquarters in Chicago simultaneously with the opening of the SIPMHE-sponsored 8th annual Industrial Packaging and Materials Handling Exposition in Boston, October 20.

Other officers elected are J. W. McReynolds, Kraft Foods Co., Chicago, *exec. vice president*; L. S. Beale, secretary of the Wirebound Box Manufacturers Association, Chicago, A. C. McGeath, American Box Board Co., Chicago, and E. P. Troeger, Douglas Aircraft Co., Inc., Los Angeles, *vice presidents*; M. A. Grogel, Ekco Products Co., Chicago, *treasurer*; and

John Mount, Insurance Company of North America, Philadelphia, *secretary*.

As chairman of the board, Price succeeds Paul O. Vogt, of General Electric Co., New York. Candell succeeds Price as president.

SIPMHE is a nationwide professional organization serving the fields of industrial packaging and materials handling as it relates to production, packaging, warehousing and transportation. Its membership is more than 1700.

Local chapters are located in Boston, New York City, Philadelphia, Baltimore, Washington, Cleveland, Dayton, Indianapolis, Atlanta, Chicago, St. Louis, Detroit, Kansas City, San Francisco, Los Angeles, and Milwaukee.

SIPMHE annually sponsors the major "triple feature" event of the industrial packaging and materials



Earl B. Candell, newly-elected president of Society of Industrial Packaging and Materials Handling Engineers.

handling world—the industrial packaging and materials handling exposition, protective packaging and materials handling competition, and technical short course, held this year in Boston, Mass., October 19-22.

the grip of an **iron fist**



in a soft **velvet glove**



cush-on-strap by Sackner

A patented Steel Strapping faced with soft, fluffy cellulose padding. CUSH-ON-STRAP is prescored to desired lengths and ready for immediate use. Ideal for packing all types of appliances and other finished metal products.



ST-8

WIREBOUND INSTITUTE ENROLLS THIRD GROUP OF PACKAGING ENGINEERS

The third group of students have been enrolled in the Wirebound Institute by its sponsor, the Wirebound Box Manufacturers Association. Their studies in wirebound box and crate design and specifications began in mid-September.

The approximately 100 new registrants, employed by the Association's member companies, will cover a series of 25 lessons, and will be graduated in September, 1954, as "wirebound engineers."

The students must also personally attend regional "clinics" spaced at three intervals during the course, where the written lessons are elaborated and questions are resolved by demonstrations and illustrated examples.

The Institute reports that a total of 271 members of the wirebound shipping container industry have already completed the course. The first group started their studies early in 1947 and did not complete the course until May, 1950. The second group was started early in 1949, and completed the course in March, 1951.

The third presentation of the course has been streamlined as a result of experience gained from the first two courses by the instructors, H. A. Woldsdorf, of Package Research Laboratory, Rockaway, N.J., and E. F. Gallivan, of the Wirebound Box Manufacturers Association headquarters staff, Chicago, Ill.

NOVEMBER • 1953 finish



Wirebound,
Nailed or Hinge Corner
Cleated Plywood
Cleated Craveneer
Cleated Corrugated
Watkins Type Containers
Shop and Tote Boxes
Woodsteel Nesting Boxes

★
FOR DOMESTIC OR EXPORT
FOR PEACE OR DEFENSE

**A shipping container for
every shipping purpose**

Sending your crated product through the Chicago Mill and Lumber Company Laboratory is like taking out an insurance policy for safe delivery.

Experienced engineers and crate designers use the latest in testing equipment in search for weakness that may result in transit damage to your valuable finished products. Assurance of safe arrival will result from pre-shipment testing in our National Safe Transit certified laboratory. Avail yourself of this service.

FOR SAFER TRANSIT BY •  TRUCK •  BOAT •  TRAIN •  PLANE

CHICAGO MILL AND LUMBER COMPANY

33 South Clark Street

Chicago 3, Illinois

Plants at: Helena, Arkansas • Greenville, Mississippi • Rockmart, Georgia
Tallulah, Louisiana • South Fork, Colorado • Chicago, Illinois

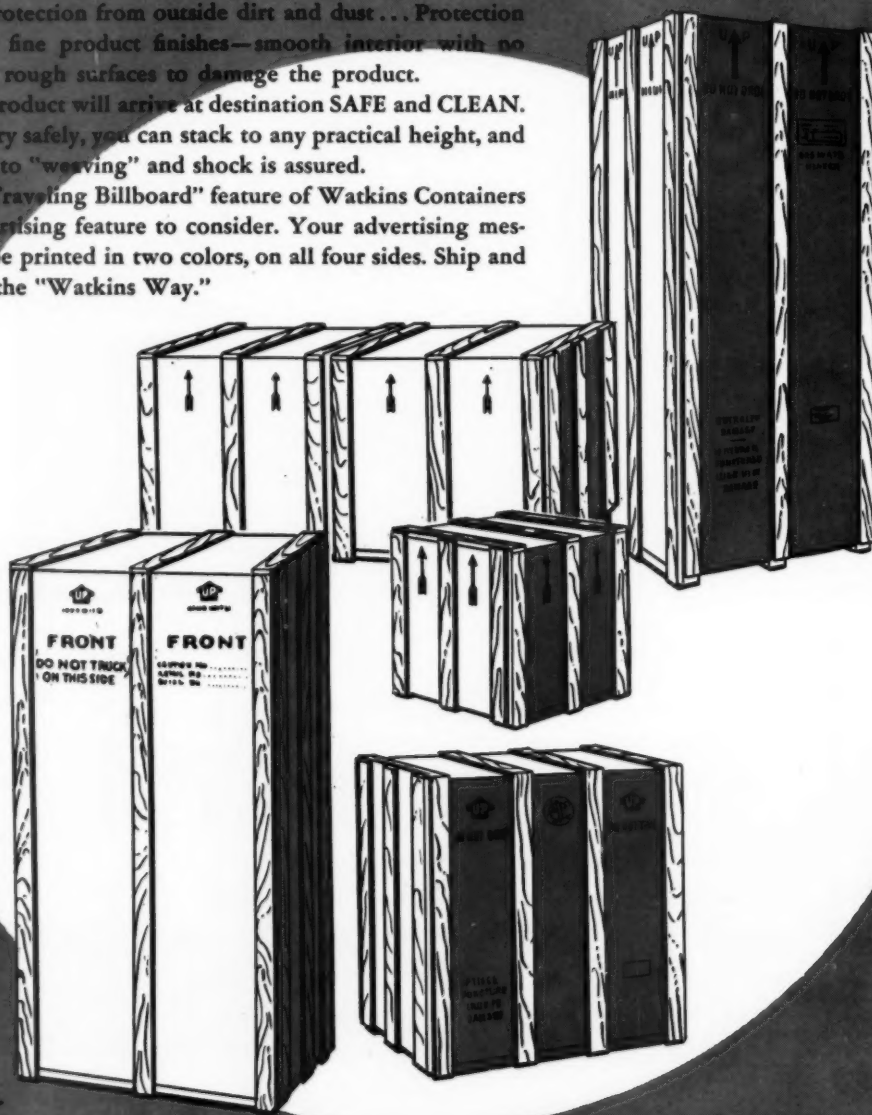
WATKINS

Containers give COMPLETE protection

With Watkins Containers you get complete product protection: Protection from outside dirt and dust... Protection inside for fine product finishes—smooth interior with no staples or rough surfaces to damage the product.

Your product will arrive at destination SAFE and CLEAN. It will carry safely, you can stack to any practical height, and resistance to "weaving" and shock is assured.

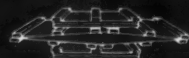
The "Traveling Billboard" feature of Watkins Containers is an advertising feature to consider. Your advertising message can be printed in two colors, on all four sides. Ship and advertise the "Watkins Way."



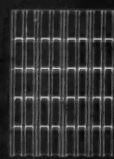
ASSEMBLY is speeded up with this easy-to-handle container. The assembly crews are all for packing the Watkins Way.



HANDLING shocks in the factory, in transit, and during delivery are resisted by the wood cleats, glued tube mat construction.



STORING problems are reduced to a minimum because of the 3-section design which provides for flat, close nesting.



STACKING is easy and safe, due to the supporting strength (minimum 4 tons on most containers) that is engineered into the Watkins design.

THERE IS A WATKINS CONTAINER MADE NEAR YOU

It will pay you to check with one of these companies now

Cornell Paperboard Products Co. 1514 E. Thomas Ave., Milwaukee, Wis.
 Cedar Container Corp. 446 East 131st Street, Cleveland, Ohio
 Crote-Rite Mfg. Corp., Division of Pacific Ports Ind. Inc. 10901 Russett Street, Oakland, California
 Dura-Crates, Inc. 940 East Michigan Street, Indianapolis, Indiana
 General Box Co. 1825 Miner St., Des Plaines, Illinois, and 16th and Maple Sts., Louisville, Kentucky
 Hom & Martin Mfg. Co. Watseka, Illinois
 Illinois Box & Crate Co. 811 Center Street, Plainfield, Illinois

Kieckhefer Box & Lumber Co. 1715 West Canal Street, Milwaukee, Wis.
 Lane Container Corp. 10212 Denton Road, Dallas, Texas
 Lewisburg Container Co. 243 Singer Street, Lewisburg, Ohio
 Livingston Wood Manufacturing, Ltd. Tillsonburg, Ontario, Canada
 Loya Mfg., Inc. 608 South Commerce Street, Wichita, Kansas
 Pennsylvania Box & Lumber Co. 2331 N. Bodine St., Philadelphia 33, Pa.
 Utility Crate Corporation 1985 E. 16th Street, Los Angeles 21, California

—an inquiry to any of these companies will get prompt attention—



The WATKINS CONTAINER Manufacturers

136 Safe Transit Certifications

THE following companies are certified under the National Safe Transit Program.

A-B Stoves Division
Detroit-Michigan Stove Company
Detroit, Michigan

Active Tool & Manufacturing Co.
Detroit, Michigan

Admiral Corporation
Chicago, Illinois

AllianceWare, Inc.
Alliance, Ohio

Altorfer Bros. Company
Peoria, Illinois

American Kitchens Division
Avco Mfg. Corp.
Connersville, Indiana

Apex Electrical Manufacturing Co.
Cleveland, Ohio

Automatic Washer Company
Newton, Iowa

Barrows Porcelain Enamel Company
Cincinnati, Ohio

Beam Manufacturing Company
Division of Solar Corporation
Webster City, Iowa

The Bellaire Enamel Company
Bellaire, Ohio

Belmont Stamping & Enameling Co.
New Philadelphia, Ohio

Bendix Home Appliances
Division — Avco Mfg. Corp.
South Bend, Indiana

Ben-Hur Manufacturing Company
Milwaukee, Wisconsin

Boston Stove Foundry Company
Reading, Massachusetts

Bryant Heater Division
Affiliated Gas Equipment, Inc.
Cleveland, Ohio

Bryant Heater Division
Affiliated Gas Equipment, Inc.
Indianapolis, Indiana

Bryant Heater Division
Affiliated Gas Equipment, Inc.
Tyler, Texas

Brown Stove Works, Inc.
Cleveland, Tennessee

Caloric Stove Corporation
Topton, Pennsylvania

Canadian General Electric Co., Ltd.
Montreal, Quebec, Canada

Canadian Westinghouse Company, Ltd.
Hamilton, Ontario, Canada

Canton Stamping & Enameling Co.
Canton, Ohio

Central Rubber & Steel Corporation
Findlay, Ohio

Chambers Corporation
Shelbyville, Indiana

Chicago Vitreous Enamel Product Co.
Cicero, Illinois

Conlon Bros. Mfg. Co.
Chicago, Illinois

Conlon-Moore Corporation
Chicago, Illinois

Continental Water Heater Co.
Los Angeles, Calif.

Cribben and Sexton Company
Chicago, Illinois

Crosley Division, Avco Mfg. Corp.
Richmond, Indiana

Crosley Division, Avco Mfg. Corp.
Nashville, Tennessee

Crunden Martin Manufacturing Co.
St. Louis, Missouri

Davis Products Co.
Niles, Michigan

Day & Night Division
Affiliated Gas Equipment, Inc.
Monrovia, California

Dearborn Stove Company
Chicago, Illinois

Deepfreeze Appliance Division
Motor Products Corporation
North Chicago, Illinois

Detroit-Michigan Stove Company
Detroit, Michigan

The Dexter Company
Fairfield, Iowa

Dixie Products, Inc.
Cleveland, Tennessee

Dostal & Lowey Company, Inc.,
Menomonee Falls, Wisconsin

The Duchess Company
Alliance, Ohio

Duo-Therm Division
Motor Wheel Corporation
Lansing, Michigan

Eagle Range & Mfg. Company
Belleville, Illinois

Easy Washing Machine Corporation
Syracuse, New York

The Enamel Products Company
Cleveland, Ohio

Fedders-Quigan Corporation
Buffalo, New York

Fedders-Quigan Corporation
Maspeth, Long Island, N. Y.

Federal Enameling & Stamping Co.
Pittsburgh, Pennsylvania

Firestone Steel Products
Akron, Ohio

Firestone Steel Products
Wyandotte, Michigan

The Fletcher Enamel Company
Dunbar, West Virginia

Florence Stove Company
Kankakee, Illinois

Florence Stove Company
Lewisburg, Tennessee

The Floyd-Wells Company
Royersford, Pennsylvania

Frigidaire Division
General Motors Corporation
Dayton, Ohio

General Electric Company
Erie, Pennsylvania

Geneva Modern Kitchens, Inc.
Geneva, Illinois

Globe American Corporation
Kokomo, Indiana

Hardwick Stove Company
Cleveland, Tennessee

Haskell Manufacturing Co., Inc.
Pittsburgh, Pa.

Heintz Manufacturing Company
Philadelphia, Pennsylvania

Holland-Rieger Division
Apex Electrical Mfg. Co.
Sandusky, Ohio

Hotpoint Company
Chicago, Illinois

Ingram-Richardson, Inc.
Frankfort, Indiana

International Harvester Company
Evansville, Indiana

Jordan Refrigerator Co., Inc.
Philadelphia, Penna.

Kaiser Metal Products, Inc.
Bristol, Pennsylvania

Kresky Manufacturing Co., Inc.
Petaluma, California

Kuehne Manufacturing Co.
Mattoon, Illinois

Landers, Frary & Clark
New Britain, Connecticut

A. J. Lindemann & Hoverson Co.
Milwaukee, Wisconsin

Lisk-Savory Corporation
Buffalo, New York

Locke Stove Company
Kansas City, Missouri

Luxra Company
Atchison, Kansas

Magic Chef, Inc.
Cleveland, Ohio

Magic Chef, Inc.
Lorain, Ohio

Magic Chef, Inc.
St. Louis, Missouri

Majestic Manufacturing Co.
St. Louis, Missouri

Malleable Iron Range Company
Beaver Dam, Wisconsin

Malsbary Manufacturing Co.
Oakland, California

Manitowoc Equipment Works
Manitowoc, Wisconsin

The Maytag Company
Newton, Iowa

McCray Refrigerator Company, Inc.
Kendallville, Indiana

Meadows Division, Thor Corporation
Bloomington, Illinois

Midwest Manufacturing Company
Division of Admiral Corp.
Galesburg, Illinois

Moffats, Limited
Weston, Ontario, Canada

The Moore Enameling & Mfg. Co.
West Lafayette, Ohio

Mt. Vernon Furnace & Mfg. Co.
Mt. Vernon, Illinois

Murray Corporation of America
Scranton, Pennsylvania

Murray Manufacturing Company
Murray, Kentucky

Nash-Kelvinator Corporation
Grand Rapids, Michigan

Neon Products, Inc.
Lima, Ohio

Nesco, Inc.
Milwaukee, Wisconsin

Newark Stove Company
Newark, Ohio

Norge Division, Borg-Warner Corp.
Effingham, Illinois

Norge Division, Borg-Warner Corp.
Herrin, Illinois

Norge Division, Borg-Warner Corp.
Muskegon Heights, Michigan

Odin Stove Manufacturing Co.
Erie, Pennsylvania

O'Keefe & Merritt Company
Los Angeles, California

Payne Furnace Division
Affiliated Gas Equipment, Inc.
Monrovia, California

Peerless Manufacturing Corporation
Louisville, Kentucky

Perfection Stove Company
Cleveland, Ohio

Philco Corp., Refrigerator Division
Philadelphia, Pennsylvania

Prentiss-Wabers Products Co.
Wisconsin Rapids, Wisconsin

Quincy Stove Mfg. Co.
Quincy, Illinois

Ranney Refrigerator Company
Greenville, Michigan

Remington Corporation
Auburn, New York

Republic Stamping & Enameling Co.
Canton, Ohio

Revco, Inc.
Deerfield, Michigan

Reznor Manufacturing Company
Mercer, Pennsylvania

Rheem Manufacturing Company
Chicago, Illinois

Geo. D. Roper Corporation
Rockford, Illinois

Milton Roy Company
Philadelphia, Pennsylvania

Ryan Refrigeration Company
Hopkins, Minnesota

Samuel Stamping & Enameling Co.
Chattanooga, Tennessee

Seeger Refrigerator Co.
Evansville, Indiana

Seeger Refrigerator Co.
St. Paul, Minnesota

Servel, Inc.
Evansville, Indiana

A. O. Smith Corporation
Kankakee, Illinois

Speed Queen Corp., Ironer Division
Algonquin, Illinois

The Tappan Stove Company
Mansfield, Ohio

Temco, Inc.
Nashville, Tennessee

Thor Corporation
Chicago, Illinois

United Specialties Company
Philadelphia, Pennsylvania

United States Rubber Company
Fulton, New York

United States Stamping Company
Moundsville, West Virginia

Universal Major Elec. Appliances, Inc.
Baltimore, Maryland

Victor Products Corporation
Hagerstown, Maryland

Westinghouse Electric Corporation
East Springfield, Mass.

Westinghouse Electric Corporation
Mansfield, Ohio

Westinghouse Elec. Corp.,
Beaver, Pa.

Westinghouse Electric Corp.
Sunbury, Pennsylvania

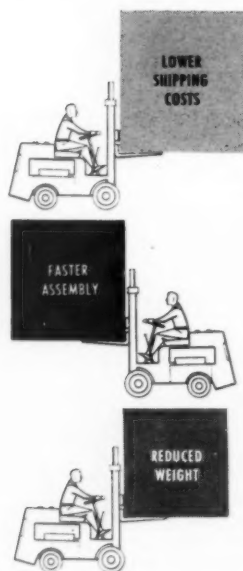
S. S. White Dental Mfg. Co.
Staten Island, New York

John Wood Company
Conshohocken, Pa.

York Corporation
York, Pennsylvania



No matter where they're bound
SHIP THEM WIREBOUND !
 and Stack 'em High As You Like



Modern handling methods call for quick and easy storage—in a minimum of space. The special Wirebound construction of strong steel wire and light, tough wood suits itself to modern methods of materials handling. You stack 'em fast, efficiently and high as you like. Shown above are some high-stacked Wirebound pallet boxes that are used for inter-plant shipments and parts storage. No other container is so perfectly suited to fork truck handling. They appeal to economy-minded management. We will be pleased to give you all details on versatile Wirebounds, regular or pallet boxes and crates.

MAIL THIS COUPON NOW!

Wirebound
BOXES & CRATES



WIREBOUND BOX MANUFACTURERS ASSOCIATION

Room 1100, 327 South LaSalle Street, Chicago, Illinois

- ☐ Have a sales engineer give me the whole story
☐ Send me a copy of "What to Expect from Wirebounds"

Name

Firm Name

Address

City, Zone and State

Packaging operations at Gray and Dudley

combining the assembly and packaging of 47 different models and sizes of domestic heating appliances into one integrated operation

COMBINE 47 different models and sizes of major domestic appliances ranging from table-top water heaters to heavy cast iron coal circulators and ranges with restricted space for packing and you are bound to have a major packing-for-shipment problem.

The 91-year-old Gray and Dudley Co., of Nashville, Tenn., had just such a problem. It licked it, however, by adopting just one type of shipping container in 14 different sizes to fit all 47 models and sizes of appliances.

The conversion from making its own shipping containers to the use of prefabricated scientifically engineered containers was begun two decades ago by Gray and Dudley Co. The conversion has continued progressively since then until, now, wrap-around crates in 14 different sizes, each engineered for specific purposes, have been adopted and crate-making has been eliminated.

Gray and Dudley products include 12 models of oil circulators, 15 models of gas and electric ranges, 4 models of cast iron ranges, 12 models and sizes of electric water heaters, a 539-pound coal circulator, and spare parts for Army ranges.

Operation geared for fast change-over from one product or model to another

All are packed speedily, easily, economically, and without the confusion and delays encountered when the company made its own crates. Assembly lines can change instantly from making one product or one model to another entirely different product, and even back again, with-

out causing jam-ups in the packing area.

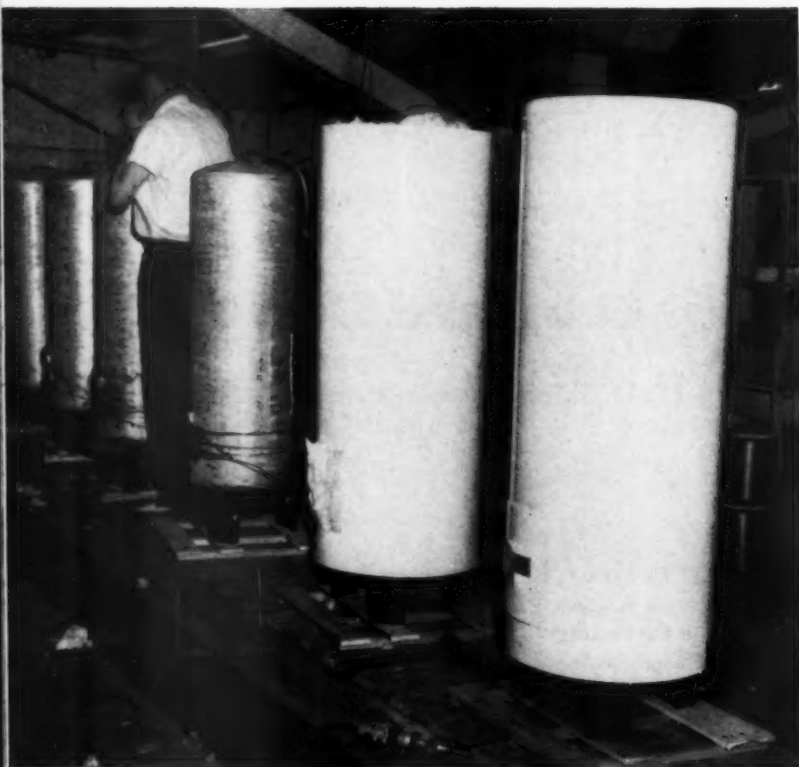
This is accomplished by moving unassembled crates in small numbers from the storage area to the packing area in accordance with production schedules so that, when production changes from one product to another,

an adequate supply of the proper crate is at hand. Thus, packing crews are not delayed by having to wait for the required crates to be delivered or for lumber to be cut to proper lengths.

The unassembled crates are stacked in minimum floor space before use both in the storage and packing areas.

Coal circulators almost completely assembled are nearing the end of the assembly line at the Gray and Dudley plant, in Nashville, and are being prepared for shipment. The elbow and top grill of each unit are wrapped in paper and placed inside the firebox, after which a protective paper bag is slipped over the unit.





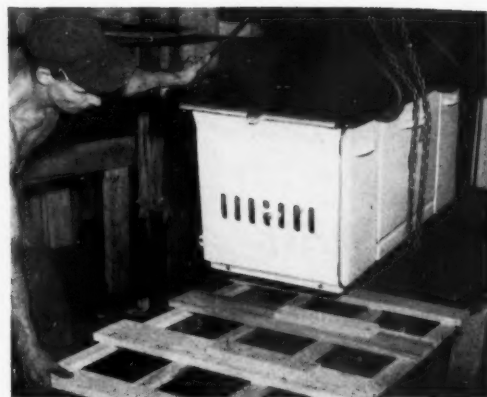
The integration of two separate operations -- assembly and packing -- into one has resulted in important production economies at the Nashville factory of Gray and Dudley Co. These upright 30-gallon electric water heaters are an example. A heater is assembled after its base is bolted to the base of the shipping crate. After assembly, packing-for-shipment is done as a continuation of the assembly operation. The result is drastically reduced man-time needed to package a heater, no clogging of assembly lines, and saving of floor space once required for packing.

In nearly all cases, packing is closely integrated with assembly with the products being assembled actually upon the bases of their shipping containers so that assembly smoothly merges into the final packing-for-shipment process.

Impressive monetary savings

Company officials affirm that monetary savings directly traceable to the use of engineered containers have been impressive at the factory itself. Dealers and distributors also have enjoyed appreciable economies as the result of easier, quicker, and safer unpacking; elimination of shipping damage due to container failure; sales stimulus resulting from better display of crated appliances; and pronounced lower freight charges as the result of lower shipping weights permitted by reduced container tare weights.

ST-14



A 468-pound enameled cast iron domestic range is lowered onto specially-engineered base of the wirebound crate that will carry it in shipment. (Note use of padded handling hooks.) Wooden blocks nailed to the crate base will engage the bottom of the range so that the unit will not shift during shipment or handling. As compared to when it made its own crates for this unit, the Gray and Dudley traffic department computes man-time savings at 75 per cent, reduction in overall packing costs at 10 per cent, a reduction of 27 pounds or 5.5 per cent in shipping container tare weight, and complete elimination of shipping damage due to container failure from ordinary shocks and jars.

At the end of assembly line, a table-top electric water heater is covered with protective packaging material, and then is wrapped up in three man-minutes for shipment.





**PERFECTLY
PROPORTIONED**

TO GIVE
Perfect Balance

There quite obviously must be some good reason why SUPER-STRONG shipping containers have been among the leaders for nearly one hundred years.

Careful design and manufacture are important factors. Every SUPERSTRONG box or crate is proportioned to give the perfect balance of materials which makes for greatest possible protection at lowest possible cost.

We ask that SUPERSTRONG be given your consideration when next the question of shipping containers arises.



WIREBOUND BOXES and CRATES
WOODEN BOXES and CRATES
CORRUGATED FIBRE BOXES
BEVERAGE CASES
STARCH TRAYS . . . PALLETS

RATHBORNE, HAIR and RIDGWAY BOX CO.
1440 WEST 21st PLACE • CHICAGO 8, ILLINOIS

1954 PACKAGING EXPOSITION

The American Management Association has announced that its 23rd National Packaging Exposition and concurrent packaging seminars will be held April 5-8, 1954, at the Auditorium, in Atlantic City, New Jersey.

AMA reported that more than 27,000 persons viewed the 1953 exposition of packaging machinery, materials, equipment and services at the Navy Pier, in Chicago. A spokesman for the Association ventured that at-

tendance at the Chicago show will be surpassed at the 1954 show.

R. F. WEBER RETIRES AFTER 44 YEARS WITH HARVESTER

R. Frank Weber, supervisor of materials handling and packaging research, International Harvester Co., Chicago, has announced his retirement after 44 years with the firm.

Weber is recognized as one of the "deans" in the packaging and materials handling field.

He is currently chairman of three major groups: the materials handling advisory committee of the National Security Industrial Association; the volatile corrosion inhibitor committee of the Food and Container Institute; and the wirebound, light crate and box committees of the American Ordnance Association.

He is a founder and national director of the Society of Industrial Packaging and Materials Handling Engineers, and a director of the Illinois Chapter.

Automatic washers in B-G Collapsible Hinged Crates neatly stacked in Whirlpool Corporation warehouse.



6 Reasons Why...

YOU CAN'T GO WRONG WITH B-G TIGHT-CORNER COLLAPSIBLE HINGED CONTAINERS AND PALLET BOXES

- B-G Tight-Corner Containers are individually engineered to carry your product safely.
- B-G Containers are built for strength and for heavy duty stacking.
- B-G Containers come fully assembled and are shipped flat.
- B-G Containers reduce labor cost in your packing department.
- B-G Containers are laboratory tested to meet National Safe Transit specifications.
- B-G Tight-Corner Crates and Boxes assure you the greatest economy in your shipping, handling and storage problems.

Let your shipping problems—whether for defense or civilian products—be ours.

30 YEARS EXPERIENCE

in developing better, stronger and more efficient shipping and storage containers.



Tight Corner Hinge Crate



Wooden Pallet



Model A Pallet Box



Model B Pallet Box



Model C Pallet Box



Kraft Crate



Wooden Box



Six Section Panel Crate

MILLS:

ARKANSAS

GEORGIA

WISCONSIN

MINNESOTA

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Write for complete details and prices to...

BIGELOW-GARVEY
lumber company

General Office and Laboratory

320 W. HURON STREET • CHICAGO 10, ILLINOIS

SIGNODE DEDICATES NEW PLANT TO MARK 40TH ANNIVERSARY

Officials and friends of Signode Steel Strapping Co., Chicago, gathered in Weirton, W. Va., October 22, to dedicate the firm's new \$1,500,000 plant, and to celebrate the company's 40th anniversary. Heading the contingent from Chicago was John W. Leslie, chairman of the board, and



JOHN W. LESLIE

head of the company since 1916.

Signode's anniversary year is also regarded by many as the 40th anniversary of the tensional steel strapping industry.

The company began business with a half-dozen employees. Expansion came rapidly, say Signode officials, even as other companies entered the field.

Today, Signode has factories in Chicago, Baltimore and Weirton, 11 warehouses, 47 sales offices, 65 foreign subsidiaries and distributors, and over 1000 employees to serve an estimated 30,000 customers.

Ask the man who loads your freight cars about



Type B Devilclaw Blocking Angle. Size: 6" long, 6" high by 4" wide with a 2" long toe to extend under crate or box. Complete with 1 1/2" slot to accommodate steel strapping if desired. Tests show holding power against impacts up to 5,000 pounds per unit.

Price \$78.00 per 100 pcs.

DEVILCLAW BLOCKING ANGLES



Type A Devilclaw Blocking Angle. Built of heavy gauge steel and designed for stowing reels and wheeled vehicles. Dimensions: 8" long, 6" wide by 7 1/4" high formed on a 60 degree angle. Nails can be driven easily by removing strut and replacing it after Angle is securely fastened. Removing strut permits Angles to nest and reduce shipping cost.

Price \$78.00 per 100 pcs.



Typical installation of our No. 44 Devilclaws blocking a car of shells. Shipper drops loaded pallets on the Angles to drive their prongs into the car floor. Reported savings in time, material and labor averages \$30.00 per car.

Yes, carloading methods have changed and your crew knows it! You just can't keep a good thing like Devilclaw Blocking Angles secret—conscientious workmen will spread the word around.

Devilclaw Blocking Angles have earned this approval by being a good tool doing a good job, resulting in these advantages:

Eliminates wood blocking plus the time and labor required to install it.

Low in cost — reduces shipping overhead.

Quick and easy to install — cuts carloading time way down.

Versatile — anchors, supports, braces, separates.

Superior protection to goods in transit — cargo reaches destination in the exact spot placed by the shipper.

Design permits removal of Angles and nails in one operation — speeding the return of empties.

Wide range of patterns reasonably priced.

No. 44 Devilclaw Blocking Angle designed for universal service. Size: 4" long, 4" high, 4" wide.

Price \$24.00 per 100 pcs.

Our **No. 41 K-Strut** can be used with the No. 44 Angle to increase holding power up to estimated 3,000 pounds.

Price \$5.00 per 100 pcs.



Take advantage of the carloading short-cuts Devilclaw Blocking Angles provide by specifying their use in your operations immediately.

• • •

A letterhead request, referring to this advertisement, will bring free samples for testing in your own plant and data on dollar savings.

CAR BLOCKING, INC. MANUFACTURERS

1952 KIENLEN AVE.

ST. LOUIS 20, MO.

BLOCKING
DEVILCLAW
ANGLES

CLARK EQUIPMENT SETS UP ILLINOIS TECH SCHOLARSHIP

Clark Equipment Co., Buchanan, Michigan, has established a \$2000 scholarship fund at the Illinois Institute of Technology, Chicago, for students majoring in materials handling, it was announced by Dr. Ralph G. Owens, dean of engineering.

Known as the Eugene B. Clark scholarship, in honor of the founder of Clark Equipment, the scholarship

will be awarded annually to a junior working for a degree in industrial engineering and majoring in ma-

terials handling. The grant will cover tuition costs for the student's final two years of school.

SAFE TRANSIT LABORATORY DIVISION MEETING, NOVEMBER 17

The National Safe Transit Committee has announced that all NST-certified laboratories have been invited to attend a meeting of the NST Laboratory Coordinating Division, to be held at the Palmer House, in

Chicago, on November 17.

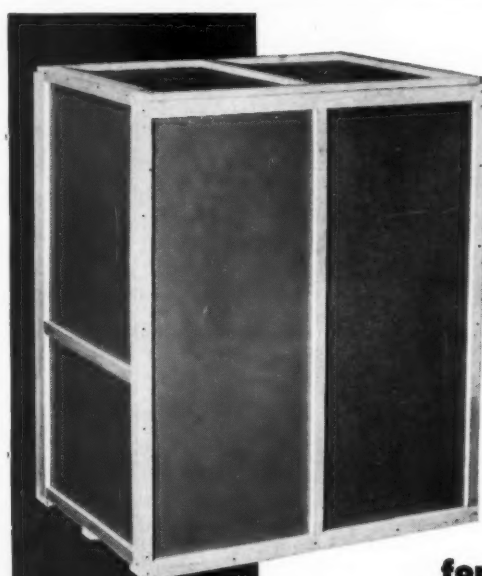
High on the meeting agenda will be discussion on the use of NST test methods for testing packaged units beyond the area of the National Safe Transit Program as now constituted.

25 SAFE TRANSIT LABORATORIES

With other certifications pending, 25 laboratories are already participating in the NST Program.

The certified laboratories include:

- American Gas Associations Labs.
Los Angeles, California
- Atlas Plywood Corporation
Lawrence, Massachusetts
- Bigelow-Garvey Lumber Company
Chicago, Illinois
- Chicago Mill and Lumber Company
Chicago, Illinois
- Container Corporation of America
Chicago, Illinois
- Container Laboratories, Inc.
New York City, New York
- Container Laboratories, Inc.
Chicago, Illinois
- Cozier Container Corporation
Cleveland, Ohio
- Dura-Crates, Inc.
Indianapolis, Indiana
- The Fairfield Paper & Container Co.
Baltimore, Ohio (project 1-a only)
- Fort Wayne Corrugated Paper Company
Fort Wayne, Indiana
- General Box Company
Des Plaines, Illinois
- The Hinde & Dauch Paper Company
Sandusky, Ohio
- Inland Container Corporation
Indianapolis, Indiana
- International Paper Company
Georgetown, South Carolina
- The Mengel Company
Louisville, Kentucky
- The Mengel Company
Fulton, New York
- The Mengel Company
Winston-Salem, North Carolina
- Ohio Boxboard Company
Rittman, Ohio
- Package Research Laboratory
Rockaway, New Jersey
- Packaging Service Corporation
Wyncote, Pennsylvania
- The Don L. Quinn Company
Chicago, Illinois
- Rathborne, Hair and Ridgway Box Co.
Chicago, Illinois
- Twin Cities Container Corporation
Benton Harbor, Michigan
- U. S. Testing Company, Inc.
Hoboken, New Jersey



Cleated Fibre Shipping Containers

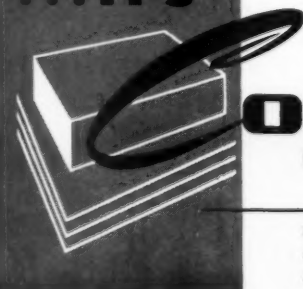
**for Refrigerators,
Ranges, Washers, Furnaces
and other appliances**

Major appliances are handled and shipped with greater safety when packaged in cleated fibre containers.

Cornell Cleated Fibre Containers are dirt-proof, light in weight, strong, and can be printed to dramatically display and advertise your product.

FOR
boxes

...IT'S



CORNELL

PAPERBOARD PRODUCTS CO.
MILWAUKEE 1, WISCONSIN

SPECIALTY PAPERBOARDS • FOLDING CARTONS
CORRUGATED BOXES • SOLID FIBRE BOXES
CLEATED FIBRE CASES • FIBRE WALL BOARDS

CANADIAN PACKAGING SHOW IN TORONTO, NOVEMBER 3-5

The second Canadian National Packaging Exposition and concurrent Conference, to be held at the Canadian National Exhibition Grounds, in Toronto, November 3-5, is expected to draw an attendance of 12,000 persons.

F. C. Lennox, president of the Packaging Association of Canada, stated "We feel this interest was caused largely by the success of last year's Exposition, the first of its kind ever held in Canada."

Sales directly attributed to the 1952 show have been estimated at \$15,000,000, with one exhibitor completing sales on the floor totalling \$500,000, stated Lennox.

The fact that space commitments for the 1953 Exposition were completed 3½ months ahead of schedule gives some indication of the interest in this year's show by packaging, packing and materials handling companies from Canada, United States, United Kingdom and Continental Europe, Lennox pointed out.

The Packaging Association of Canada is said to represent a \$700,000,000 industry, an increase of \$50,000,000 or eight per cent over last year, and employs more than 100,000 people.

Conference highlights

Some of the Conference highlights are as follows:

The opening session, November 2, will be devoted to the theme of "Industrial Packaging and Materials Handling," with R. F. Weber, recently retired as supervisor of materials handling research, International Harvester Co., discussing "Materials Handling." The name of the speaker on "Industrial Packaging" was not available at presstime. This session will close with a motion picture on materials handling.

The theme of the second day's session will be "Consumer Package Design." A feature on the program will be a movie on merchandising.

The final day's session will be concerned with the topic of "Bringing Important United States Trends to Canada."

finish NOVEMBER • 1953



Another good way to put the skids under your handling costs

Through the packaging magic of Signode Steel Strapping!

Shown here is a successful adaptation by Signode of a *basic* skid-loading method, made for a shipper of tin plate.

This commodity can easily be a shipper's headache. It is heavy and slippery, and its surfaces are vulnerable — easily dented and scratched.

So Signode engineers wrapped each unit in heavy, moisture-repellent kraft paper, placed metal protectors on the edges, and fastened it to a skid with Signode Steel Strapping. Results? Safer, easier handling at lower cost!

Can Signode help you cut handling and shipping costs through practical adaptations of one or more *basic* skid-loading methods? *It costs you nothing to find out!* Write Signode Steel Strapping Co., 2639 N. Western Ave., Chicago 47, Ill. Offices coast to coast. In Canada: Canadian Steel Strapping Co., Ltd. Foreign subsidiaries and distributors world-wide.

SIGNODE Steel Strapping Co.

SEND FOR FOLDER SHOWING 6 BASIC WAYS OF UNITIZING

ST-19

SAFE TRANSIT NEWS

NATIONAL SAFE TRANSIT COMMITTEE



DuPont Circle Building, 1346 Conn. Ave., N.W., Washington 6, D.C.

Safe Transit Certifications Total 136 - Six new companies have joined the National Safe Transit Program in recent months. The Committee is proud to record their names in order of certification:

Locke Stove Company, Kansas City, Missouri
United Specialties Company, Philadelphia, Penna.
John Wood Company, Conshohocken, Penna.
Ryan Refrigeration Company, Hopkins, Minnesota
United States Rubber Company, Fort Wayne, Indiana
Dostal & Lowey Company, Inc., Menomonee Falls, Wisc.

New Safe Transit Laboratory - The 25th Laboratory certified under the National Safe Transit Program is The Mengel Company, Corrugated Box Division, Fulton, New York. Other Mengel Company plants with Safe Transit equipped laboratories are located in Louisville, Kentucky, and Winston-Salem, North Carolina.

Laboratory Coordinating Division To Meet - All Safe Transit Laboratories have been invited to attend a meeting of the Laboratory Coordinating Division of the National Safe Transit Committee to be held at the Palmer House in Chicago on November 17th. The role of Certified Laboratories becomes increasingly important as the Safe Transit Program continues to grow, and the meeting has been called to discuss various aspects of the Program as it relates to laboratory activities and to lay plans for the future. High on the meeting agenda is discussion of the use of the NST test methods for the testing of packaged units beyond the area of the National Safe Transit Program as now constituted.

New Projects Underway - As a further aid in effectively telling the story of pre-shipment testing, the Committee is working on a short film illustrating testing of carload shipments. This is expected to be ready for general distribution early in 1954. A manual of recommended truck loading practices is another project nearing completion.

Carrier Coordinating Division Reaches Carriers - This Division of the National Safe Transit Program has been conducting a successful campaign in the past six months to bring the Program to the attention of the loss and damage prevention or claim departments of railroads. Educational material has been widely distributed and enthusiastically received. Typical of the response is this excerpt from the Freight Claim Prevention office of a major Railroad company: "... I would like to have about 50 of your folders to place in the hands of our principal agencies and our Terminal Loss and Damage Committees in order that they may have full knowledge of the shippers' methods of pre-shipment testing in order to assure the delivery of their products in good condition, if properly handled".

Industry and Railroad Men View Safe Transit Film - An audience comprising over 240 representatives from industry and Pacific Railroads saw a showing of the National Safe Transit film in San Francisco, California. The presentation was made at a meeting of the Freight Claim Prevention Committee - Pacific Coast Shippers Advisory Board.

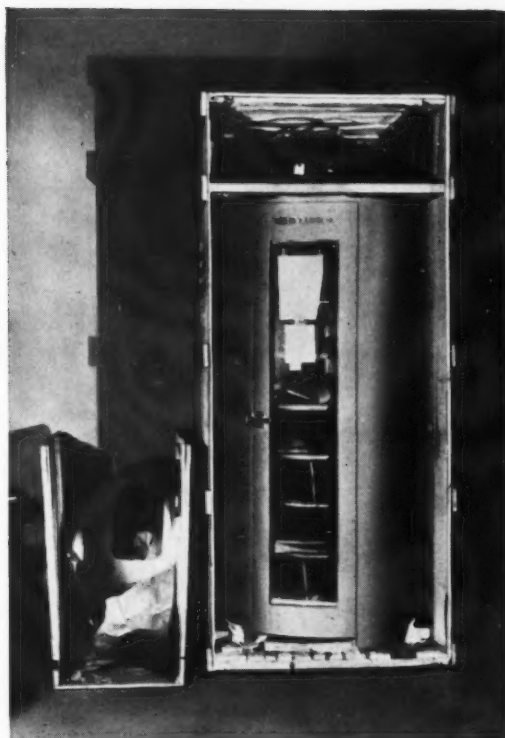


"CASE" HISTORIES FROM ATLAS PLYWOOD'S SHIPPING CONTAINER CLINIC (Safe-Transit Certified)

A single Atlas Plywood case does the job
of two cases previously used . . .
greatly increases protection . . .
cuts shipping weight 20%

THIS CASE WASTED MONEY

This Bevador cooler* used to be shipped in two heavy wooden cases — shown here with fronts removed to reveal makeshift blocking methods. Sample was received at Atlas Plywood "Shipping Container Clinic" with foot-long hole in crate bottom. Total gross shipping weight: 1,010 lbs.



THIS CASE SAVED MONEY

In Atlas Plywood's "Shipping Container Clinic", engineers designed a single cleated plywood case to hold both units. Note improved blocking — also that cases are shipped in horizontal position, with skids on bottom and end for easy handling. Cleated plywood virtually eliminates transit damage. Total gross shipping weight: 800 lbs. — 210 lbs. of shipping cost saved.

IN YOUR CASE — POSSIBLY A SIMILAR SAVING

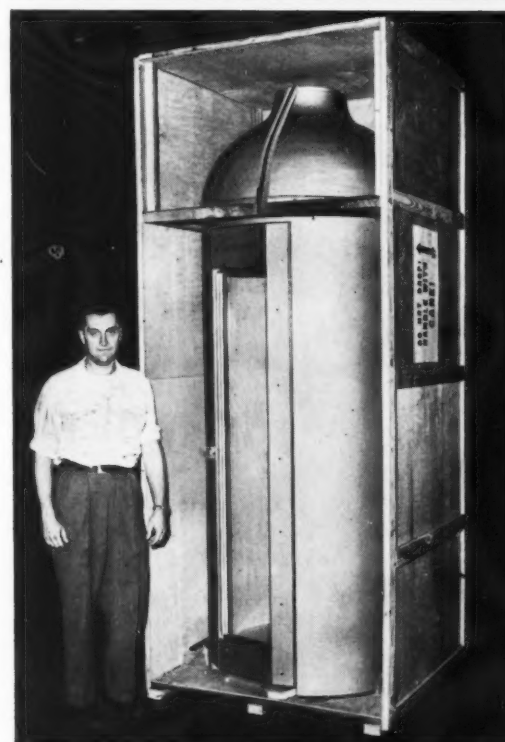
What you pay for *shipping* includes what you pay for the containers, what you pay for *shipping* the containers (at the rate for the contents), and what you pay for damages.

Have Atlas Plywood — the "greatest name in plywood" — help you save all you can on these costs. Our "Shipping Container Clinic" offers a free service for testing your present containers under all kinds of simulated conditions — and recommending improvements. There's no cost or obligation — and you are invited to come along and watch the tests.

Your Atlas Plywood representative (see Classified Telephone Directory) will be glad to make the arrangements. Or write to — Rodney P. MacPhie, 1432 Statler Building, Boston, Mass.

Atlas Plywood

CORPORATION
FROM FOREST TO FINISHED PRODUCT



*Mfrd. by Jewett Refrigerator Co., Buffalo, N. Y.



PLYWOOD
CONTAINERS
FLUSH DOORS
HARDWOOD PANELS

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MIDWEST ENAMELERS CLUB ELECTS FELLOWS PRESIDENT

Roger L. Fellows, of Century Vitreous Enamel Company, Chicago,



was recently elected president of the Midwest Enamelers Club to fill the vacancy created when William K. Burris, of Ceramic Industry, was transferred to Cleveland, Ohio.

The first winter meeting of the Club, as announced by Fellows, will be December 12, at the LaSalle Hotel, Chicago. Two other meetings are scheduled for early in 1954. Tentative dates are January 23 and March 20.

BIRMINGHAM ENAMELING PLANT

News comes to *finish* that the Alabama Porcelain Enameling Company is operating in Birmingham, Alabama, for the finishing of fabricated steel and cast iron. The company is owned and operated by a father and son team, Noble D. Jones and son Robert E. Jones.

NOVEMBER • 1953 finish